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MAP of BRITAIN

DIVIDED INTO

18 Provinces.. 38 Sub-provinces..

82 Counties and Vice-counties.

Designed to illustrate

THE DISTRIBUTION OF

BRITISH PLANTS.

XXXVIII. UPPER NORTH ISLES

XVIII.

XVIII.b. LOWER NORTH ISLES XXXVI

XVIII. OUTER WEST ISLES OR HEBRIDES XXXIII NORTH WEST ISLES XXXIV

XVII. UPPER N^ern HIGHLANDS XXV

XVII. XXXII. LOWER N^ern HIGHLANDS

XVII. XXXI NORTH EAST HIGHLANDS

XVI. INNER WEST HIGHLANDS XXVI

XV. MID EAST HIGHLANDS XXX

XV. XXIX N^ern EAST HIGHLANDS

XIV. EAST LOWLANDS XXVIII

XIV. S.W. LOWLANDS XXVII

XIII. XXVI W^ern WEST LOWLANDS

XI. XXXV

XII. XXV LAKES

X. EAST RIDING XXII

X. WEST RIDING XXIII

IX. MERSEY XII

VIII. EAST TRENT XIX

VII. XVIII N. WALES

VII. WEST TRENT XX

IV. XI. NORTH OUSE

V. XV. NORTH SEVERN

V. WEST OUSE XI

V. MID SEVERN XIV

V. XVII. S.W. WALES

VI. XIII. S^th SEVERN

VI. W. THAMES IX

III. S^th THAMES VIII

III. SOUTH THAMES VII

I. V. PENINSULA

I. III. MID PENINSULA

II. WEST CHANNEL

II. EAST CHANNEL VI.

I. W^n PENINSULA

EXPLANATIONS.

*This Map is based upon the arrangement of the counties with provinces superadded, in the Sixth volume of the Cybele Britannica, page 481. The larger provinces and large counties are further subdivided, in order to form a natural & characteristic subdivision for the districts and those counties in any way to be studied and understood, primary and secondary. The sub-provinces and vice-counties are mostly natural districts, with a portion of a county or two added, with a portion of a county or two added, with a portion of a county or two added

CYBELE BRITANNICA;

OR

BRITISH PLANTS

AND THEIR

GEOGRAPHICAL RELATIONS.

BY

HEWETT COTTRELL WATSON.

54624

VOL. III.

DISTRIBUTION OF SPECIES.

(Concluded.)

81. FLUVIALES.—88. PTERIDIOIDES.

(With Additions to the former Volumes.)

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The Binder is requested to fold and place the 'Map of Britain' at the beginning of volume third, before the title-page.

EXPLANATIONS

INTRODUCTORY TO THE THIRD VOLUME OF

CYBELE BRITANNICA.

THE THIRD volume of the Cybele Britannica will continue and conclude the distribution of species treated singly; and in so far it will be simply a continuation and conclusion of the two former volumes. A second portion of this volume will be devoted to such corrections and additions as increased knowledge may have rendered necessary, in reference to the distribution of the species treated in those former volumes. The distribution of the whole series of species will thus be brought down to the end of the year 1851. If sufficient space shall then remain, without rendering the volume inconveniently bulky, a tabular summary will be introduced, designed to compress the leading facts of species-distribution into a more condensed and selected condition, for the use of Botanical Statists.

Thus far, the three earlier volumes of Cybele Britannica will differ much from the fourth and final volume. In the concluding volume it is proposed to treat the distribution of plants under a different aspect; that is to say, not each one singly and apart, but the whole taken in connexion; in order that their individual peculiarities

of distribution may appear in comparison and contrast, as reciprocal illustrations of each other.

The causes that now continue the existing distribution of plants over the surface of the earth, or those that have originally and gradually determined their distribution, are too wide in their influence, to admit of being properly treated in a work devoted to the plants of one small country, and to their distribution within that limited space only. Should the Author have life and leisure to carry out his present wishes, and enduring inclination adequate to the task, he may perhaps write a '*British and Foreign Cybele*,' for the purpose of tracing the distribution of British species over other parts of the earth, and of showing the true relation borne by the flora of Britain to the floras of neighbouring countries. The causes or conditions of their distribution might then appropriately find place and room in a work of that more comprehensive, and necessarily less detailed, character. His investigations have not hitherto led him to adopt the current opinion (or, rather, mere guess) that the flora of the British islands has been derived from the opposite countries of the Continent,—at least, not to any greater proportionate extent, than the floras of those countries may be said to have been derived from Britain. Interchange has most likely taken place; Britain giving, as well as receiving.

It is not expected that the fourth volume of Cybele Britannica can be published within two years from the date of the present volume, if so early as only two years after. That contemplated fourth volume would of course be founded upon the facts detailed in the three earlier volumes; indeed, such a volume might now be made by a connected and comparative re-arrangement of the same details. But there is still much that bears upon

the subject, remaining unpublished and unarranged among the Author's notes in manuscript, or even confined to the still more precarious keeping of his own personal recollections. He therefore wishes and hopes to be enabled to write a fourth volume, to complete a work on which he has bestowed no small share of his time and attention; while fully aware that the completed work would still be far from exhausting the subject.

But in case any circumstance should prevent that contemplated fourth volume from ever being written, the three earlier volumes of Cybele Britannica may even then be considered in the character of a completed (though much narrowed) treatise on the distribution of plants in Britain. It would still constitute an advanced ground or foundation, upon which a more perfect construction might be raised at some future time, and by some other hand. The chief difference in the present work would be, that the facts remained only in arranged details, instead of having been first investigated and shown in detail, and then grouped together connectedly, to illustrate their geographical relations to each other.

The 'London Catalogue of British Plants,' published for the Botanical Society of London, is still used as an Index to the series of species in the Cybele Britannica. It will not be difficult to keep in recollection, that the names and numbers of the species, in each successive volume of this work, will be found to correspond with those of the three successive editions of the London Catalogue;—the first volume, with the first edition,—the second volume, with the second edition,—the third volume, with the third edition. Though the names and numbers of the species are nearly uniform in the three editions, progressive knowledge and altered views led to some few changes therein, and additional species

unavoidably caused the insertion of several duplicate Nos. Hence, too, some duplicate Nos. and other corresponding changes in the Cybele Britannica also.

Another coincidence may be found elsewhere, which it is worth while to point out, because geographical botany has very close dependence on the department of descriptive botany. The three successive editions of Mr. C. C. Babington's 'Manual of British Botany' bear the dates of 1843, 1847, and 1851. The three volumes of Cybele Britannica are dated in 1847, 1849, and 1852, having been written or partially printed in the years preceding their publication. In each case their publication followed that edition of the Manual which corresponds numerically with the volume of the Cybele.

Thus, the state of our knowledge in the elementary or descriptive department of British botany, at the dates of each volume of this work, may be ascertained from the corresponding edition of the Manual, and from no other publication of the same class. The Manual continues to be decidedly the best descriptive Flora of Britain hitherto published;—a very good model having been copied in its plan and general composition,—the best authorities in European botany having been regularly and fully consulted,—and each successive edition having been attentively revised. Moreover, it is the work of a botanist who is much better acquainted with the plants of the British islands, than was the Author or Editor of any other Flora of Britain without exception.

No doubt the British Flora of Sir W. J. Hooker was a very good work originally; and its publication sufficiently opportune and beneficial a score of years ago. But British botany has progressed much during the past twenty years, while the Author of the British Flora was directing his own attention almost exclusively to the

plants of other and distant regions. Hence, the British Flora was falling more and more into arrear, in each successive edition, and was thus making an opening for the successful competitor which appeared in the Manual. It is left behind, and will now never overtake that competitor; but, after having been really useful and much used in its time, it will in turn soon fall into disuse, like the Floras of Hudson, of Withering, of Smith.

True, 'Hooker's British Flora' has recently been re-edited, in its Sixth Edition, by a botanist of merited reputation, who has bestowed considerable pains upon it, and has doubtless made many emendations in it. But the attention of Professor Arnott, equally with that of Sir William Hooker, had been long given to exotic botany, and almost entirely withdrawn from British and even European species. And thus he too came to the task unprepared with the special kind of knowledge required for its proper performance, The British Flora, even in its amended Sixth Edition, was still left a good deal behind the state of our knowledge in British botany, at its date of publication in 1850. Without going beyond the Cybele itself it is easy to give an illustration of the fact asserted, which will be done in the next paragraph, in order to justify this comparison of the two works here.

In the Preface to the Sixth Edition of the British Flora (1850) botanists are recommended to consult Watson's 'Remarks on the Geographical Distribution of British Plants' (a small book published in 1835) for the stations and range of the species; no mention whatever being made of the Cybele Britannica, in which the same subject is treated so much more fully, and also (through increased individual experience, and accumulated general knowledge) so much more accurately. Mark the contrast. In the Preface to the Third Edition of the Manual of

British Botany, dated in the following year, the Cybele is recommended, and the Remarks not mentioned at all. This one example is not solitary, but selected because the most appropriate for mention here. It shows the differential character of the two works from beginning to end. One would bring the student up to the state of knowledge of the day, while the other would leave him behind; one acknowledges the superior work of 1847—9, while the other ignores it, and remembers only the inferior work of 1835.

Written under an inspiration at least partially different from that which seems alone to have dictated the later editions of the British Flora, Babington's Manual has become our standard work in both senses of the term; and it is likely to be long kept so. It is the most complete and perfect in itself; and it is the one certain to be the most extensively in use. From its first appearance, the Author of the Cybele Britannica fully expected this result. It was therefore his wish originally to adapt his own work to the Manual, by uniformity of nomenclature, and uniformity in the series or sequence of the species. Had this been done, it might in turn probably have led to the like uniformity in the extensively circulated and much used 'London Catalogue of British Plants.' Such an uniformity among the three publications, would have been found greatly convenient to British botanists, and not without some advantages to the parties more immediately concerned.

There were, unfortunately, two objections sufficiently formidable to prevent the Author of the Cybele from adapting this work or his other writings to the Manual. These obstacles were found in the decided bias evinced by Mr. Babington, during the half dozen years preceding publication of the first volume of the Cybele, not only to

adopt eagerly the spurious and doubtful species of other botanists, but also to add to their numbers himself, together with a proneness to adopt or make unrequired changes in nomenclature,—both tendencies being in their consequences extremely troublesome to geographical botanists, who are so frequently engaged in comparing lists of species together. The Author of the Cybele therefore felt that it would be no wise course to tie himself to the views and nomenclature of the Author of the Manual, which then threatened to be so capricious and changeable.

On the contrary, the inconveniences resulting from changed names and spurious species led him, in this work and elsewhere, to resist several of those ill-judged innovations both by ridicule and by reasons; which together have perhaps not been wholly ineffectual, howsoever slowly and indirectly a practical admission of their justness may have been rendered by subsequent second changes and retrogressions. Still, the existence of those preventing obstacles has always been regretted; differences of nomenclature and arrangement being attended with much inconvenience both to the readers and to the writers of botanical works.

This refers to the few who carry out their study of botany into some degree of scientific result, and not to the many who want a single descriptive work, only to learn the names of plants, and no more. Doubtless the greater number of those who purchase a descriptive Flora, whether medical students or others, belong to the latter class; and for them one set of names does as well as another. It is, for instance, of no importance while they are private students only, whether they call a plant Cerastium tetrandrum or Cerastium atrovirens, Hypericum dubium or Hypericum maculatum, Atriplex hastata or Atriplex deltoidea. But if they seek to communicate their know-

ledge to other botanists through the press, even in no higher form than the simple record of a locality, right names and their right applications to species, then become so far matters of public importance.

I have chosen to enter a little upon these points here, because the progress of geographical botany must depend very materially upon the progress of descriptive botany. Accuracy in this latter department affects much the very foundations of the other. Without the Manual of British Botany, the Cybele Britannica would have been considerably more imperfect than it is. And the more exactly the Author of the Manual describes true species, and adheres to established names, without the intermingling therewith of untenable species, and needless name-changing, the better will it be for the advancement of my own department or "hobby" in botany; which latter I am naturally desirous to see advancing.

Admitted, nevertheless, that Mr. C. C. Babington would be fairly entitled to meet my objections against some of his botanical doings, by suggesting, that the habitual use of Hooker's Flora for ten or fifteen years, early training under the late Professor Graham, and geographical convenience, are very likely to have given to me (troublesome criticizer of others) a predisposition to "lump" species, as strong in its way, as any bias that he may have towards "splitting" species. And truly, he might cite instances, in which I have eventually followed his views, after first turning and looking in the contrary direction as long I could do with eyes open.

DISTRIBUTION OF SPECIES.

(CONCLUDED.)

1118. POTAMOGETON DENSUS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14.
South limit in Devon, Isle of Wight, Kent.
North limit in Haddington, Edinburgh, Lanark.
Estimate of provinces 14. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Lacustral. As with several of the succeeding species of its genus, the provincial and comital estimates are taken higher for P. densus than have hitherto been shown by existing records. Partially concealed by their submerged situations of growth, and inconspicuous by their flowers, the species of Potamogeton are doubtless oftener overlooked, than are the gayer-coloured, or otherwise more conspicuous, land plants. P. densus appears to remain yet unrecorded for the humid provinces of the Mersey and Lakes; for which our records are among the less complete, and in which the plant would seem more likely to be present than to be absent. Accordingly, they are reckoned in the estimate, together with various counties of other provinces in which the same species remains still unknown, that is, not recorded in print.

1119. POTAMOGETON PECTINATUS, *Linn.*
1119, b. POTAMOGETON MARINUS, *Linn.*
1119, c. POTAMOGETON FLABELLATUS, *Bab. Man.* 3.
1119, d. POTAMOGETON FILIFORMIS, "*Nolte.*"

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 15 * 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Lacustral. Whatever decision may be given eventually, on the distinctness of the plants included under the four names above quoted, it is impossible at present to describe their distribution separately; the name "pectinatus," under which most of the localities are recorded, having been usually employed indeterminately for any, or comprehensively for all, of the alleged species. If P. marinus and P. filiformis are synonymous names for the same plant, the group becomes divisible into three, which may be distinct species. P. flabellatus (P. zosteraceus, Bab. Man. edition 2) is said to occur in Hants (Mr. Borrer), Middlesex (Dr. J. A. Power), Herts (Flo. Hertf.), Gloucester (Mr. Thwaites), Leicester (Miss Kirby,—but doubtful), and likely enough may be already known, if not recorded, in other counties. P. filiformis is stated to occur in the counties of Leicester (Rev. A. Bloxam), Berwick and Forfar (Bab. Man.), in Ross and Orkney (Mr. J. T. Syme). According to Neill and Edmondston,

P. pectinatus grows in Orkney and Shetland; but whether these northern habitats belong to P. pectinatus, or to P. filiformis solely, must now be held doubtful.

1120. POTAMOGETON PUSILLUS, *Linn.*
1120*. "POTAMOGETON TRICHOIDES, *Cham.*"

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney;—Moray, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Lacustral. Southward from Orkney (whence I possess a specimen, labelled "P. gramineus?" by Dr. Gillies) there appears no locality known for the present species until we reach Moray and Banff, on the east side of Scotland, and Islay and Cantire, on the west. The total number of counties recorded for it scarcely amounts to 50; but those from which it thus appears to be absent, are scattered among the rest; and are those, with very few exceptions, for which our lists of the commoner species are the least complete.

Under name of *P. trichoides*, another alleged species is described in Babington's Manual, and stated to have been found in Norfolk, by the Rev. Kirby Trimmer; more doubtfully also reported from Glamorgan, as found by Mr. Moggridge (Phytol. iii. 1059). Having seen no specimen, I am unprepared to say whether it is a real species, or merely a book-species; but it stands for a true species

in the Synopsis of Koch, who was not a maker of *Vanity-species*, nor very ready to adopt them.

1120, b. POTAMOGETON COMPRESSUS, *Linn.*

Area 1 2 3 4 5 * * 8 9 10 * * 13 14 15 16 * 18.
South limit in Devon, Isle of Wight, Sussex.
North limit in Orkney;—Aberdeen, Dumbarton.
Estimate of provinces 13. Estimate of counties 25.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in England.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.
Native. Lacustral. The formula is unfortunately here filled up rather according to the use of a name, than in accordance with any satisfactory knowledge about the distribution of a species. The plant has frequently been considered a broader leaved form of P. pusillus, and occasionally perhaps mistaken for P. gramineus. My herbarium possesses only a single specimen, which was gathered in Shropshire by Mr. J. E. Bowman.

1121. POTAMOGETON GRAMINEUS, ("*Linn.*") *Aut. Ang.*

Area 1 2 3 4 5 * 7 8 9 10 11 [12] 13 * 15 * * [18].
South limit in Devon, Dorset, Sussex, Kent.
North limit in Aberdeen, Forfar, Dumfries. [Lanark ?]
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Lacustral. This species would seem by the records of its localities to be only sparingly scattered through England, and very scarce in Scotland. The sole authority for Wales, as far as my compilations of localities show, is Mr. Griffith, quoted in the Botanist's Guide, under "Flint." For Lanarkshire there is only the authority of Dr. Ure; a second county in the same province, Dumfriesshire, having been also reported by Mr. William Stevens (Phytol. iii. 392). These two provinces are allowed to stand among those ascertained for P. gramineus, although it would be desirable to have them further confirmed by other botanists. For the Lake province there would seem to be no antecedent improbability; but as it rests only on the worthless testimony of Hutton, that province is rejected from the area for want of admissible authority. This is not the P. gramineus of Koch and other Continental botanists; on which see the remarks under P. heterophyllus.

1122. POTAMOGETON ACUTIFOLIUS, *Link*.

Area * 2 3 4.

South limit in Sussex.

North limit in Norfolk.

Estimate of provinces 3. Estimate of counties 6.

Latitude 50—53. Local (Germ.) type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so, in Channel.

Ascends to 50 yards, less or more.

Range of mean annual temperature 51—49.

Native. Lacustral. The rise at once from 3 to 6 counties, in the estimate, seems considerable; but the likelihood also appears great that an easily overlooked aquatic plant may occur in other counties intermediate between, or adjacent to, those for which it has been recorded. As yet, however, it has been found only in the two counties above named as the southern and northern limits, with the intermediate one of Hertford.

1123. POTAMOGETON ZOSTERÆFOLIUS, *Schum.*

Area * [2] 3 4 5 * * 8 * [10] * * * * 15.
South limit in Essex, Warwick. [Dorset?]
North limit in Forfar.
Estimate of provinces 6. Estimate of counties 12.
Latitude 51—57. Germanic (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 49—47.

Native. Lacustral. Very sparsely distributed in Britain, according to the recorded localities. Specimens are in my herbarium from Essex (no collector's name on the label), Cambridge (Mr. C. C. Babington), Warwick (Mr. Thomas Kirk), Stafford (Rev. R. C. Douglas), Leicester (Rev. A. Bloxam), and Forfar (Prof. Balfour). Besides these counties it has been reported to grow in York (extinct?), Derby, Nottingham, within 16 miles of Poole (Salter Cat.), and at Henfield, Sussex (Winch, in N. B. G.); the province of the Channel being scarcely admissible on the two latter records, until further confirmation. Ascends almost into the superagrarian zone.

1124. POTAMOGETON CRISPUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * [18].
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Argyle. [Shetland ?]
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58 [60]. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Lacustral. The Flora of Shetland appears to be the only authority for the existence of this species northward of Moray and Argyle; and considerable hesitation is felt about admitting that single authority for plants so liable to be mistaken as are the species of Potamogeton; more especially because the Flora of Shetland is known to have been the work of a very young botanist, incautious and somewhat self-confident.

1125. POTAMOGETON PERFOLIATUS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Dorset, Sussex.
North limit in Orkney, Hebrides.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in Humber province.
Range of mean annual temperature 52—43.

Native. Lacustral. I have not myself seen this species at any considerable elevation; but it is reported to occur in Malham Tarn, in Yorkshire, which is upwards of 400 yards above the sea. Seems likely enough to occur in South Wales, being known in several of the neighbouring counties, as Somerset, Gloucester, Hereford, Salop, Cheshire, and Anglesea.

1126. POTAMOGETON LUCENS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15 * * [18].
South limit in Devon, Isle of Wight, Kent.
N. limit in Banff, Perth, Lanark. [Shetland? Orkney?]
Estimate of provinces, 15. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Lacustral. Said to occur so far northward as Shetland (Edmondston) and Orkney (Lowe's list); but verification would be desirable before implicitly relying upon these habitats, reported only upon unsafe authority. The Whey Sike, in Teesdale, where this species has been reported to occur (Flo. N. D.) may be above 200 yards of altitude; but I am unaware what is the true elevation of that alleged locality.

1127. POTAMOGETON PRÆLONGUS, *Wulf.*

Area * * 3 4 5 * * 8 * 10 * 12 * 14 15.
South limit in Berkshire, Essex.

North limit in Moray, Aberdeen, Westmoreland.
Estimate of provinces 10. Estimate of counties 20.
Latitude 51—58. Germanic (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Thames province.
Ascends to 400 yards, in Humber province.
Range of mean annual temperature 49—43.

Native. Lacustral. Only of late years distinguished from P. lucens; and its distribution is probably more extended, and less interrupted, than would appear from the area above indicated. Mr. James Backhouse reports (Phytol. i. 1126) that he found it in Malham Tarn, Yorkshire, with P. perfoliatus; and as the altitude of that tarn is said to exceed 1200 feet, the altitude above mentioned is given for the upper limit of the species. On the Western side of Britain, my notes show it reported from two counties only, Stafford (Rev. R. C. Douglas) and Westmoreland (Mr. Borrer); while there are a dozen counties of the eastern provinces in which it has been found. I have a specimen from the Botanical Society of Edinburgh, gathered in Forfarshire, by Professor Balfour, but mis-labelled "rufescens." Indeed, about half a dozen of our species of this genus have been repeatedly mis-named and cross-named on the printed labels of that Society.

1128. POTAMOGETON LONGIFOLIUS, *Gay*.

Area [12].

Incognit, or Hibernian. Said to have been found in Rydal Water, Westmoreland, and in Lough Carrib, Galway, Ireland. Mr. Borrer has ascertained that the plant of Westmoreland is P. heterophyllus (Phytol. ii. 426); and Mr. Thomas Kirk suggests that the Galway plant may really be P. lucens.

1129. POTAMOGETON HETEROPHYLLUS, *Schreb.*

Area * 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * 18.
South limit in Dorset, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel or Thames.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—45.

Native. Lacustral. It is to be feared that the localities of this species and those of P. oblongus (of British botanists) are much confused in our records; and, indeed, when drawn out in running water, some of the plants appear so intermediate that it becomes difficult to assign a name to them with confidence. While, on the one side, this greatly resembles the fluitant forms of P. oblongus, it approximates so closely to P. lanceolatus on the other side, that some of the localities reported for the latter, may be deemed almost certainly to belong to P. heterophyllus. According to Koch and Fries, this is the true Linnean P. gramineus; and yet there appears nothing grassy or grass-like about it, to suggest or to justify the specific name; while the P. gramineus of British botanists has somewhat grass-like leaves, and would seem more appropriately to receive that name. Perhaps this species may be found more nearly general than is above indicated, and also at a higher elevation.

1130. POTAMOGETON LANCEOLATUS, *Sm.*

Area 1 * * * 5 * 7 * * 10 * 12 13 * 15 * * 18.
South limit in Somerset?
North limit in Shetland?
Estimate of provinces 8. Estimate of counties 12.
Latitude 51—61. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in England.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 49—45.

Native. Lacustral. A doubtful species, the localities of which are too much confused with those of P. heterophyllus, to allow of its distribution being correctly shown by the formula. Has been stated to occur in Somerset (Dr. Southby), Gloucester (Mr. Buckman), Anglesea (Mr. J. E. Bowman!), York (Mr. James Ward; Mr. Joseph Woods?), Lake-Lancaster (Mr. F. J. Hort?), Cumberland (Mr. C. C. Babington), Dumfries (Mr. William Stevens), Kirkcudbright (Mr. Peter Gray), Forfar (Don Acc.; Flo. Forf.). Kincardine (Hook. Scot.; Bab. Man.), Aberdeen (Northern Flora; Flo. Abred.), Moray (Rev. G. Gordon; Br. Flo.; &c.), Shetland (Flo. Shetl.). The formula is filled up above in accordance with these alleged localities; but in the after portions of this work, where the details will require to be connected and generalised, it may probably be found expedient to sink P. lanceolatus under the more comprehensive P. heterophyllus.

1131. POTAMOGETON RUFESCENS, *Schrad.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Sussex, Kent.
North limit in Caithness, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Lacustral. Less liable to be mistaken, than are several of the other species; though probably some of the published localities truly belong to the fluitant form before mentioned, as intermediate between P. heterophyllus and P. oblongus. I have received examples of it also under the names of lucens (Essex and Lancaster; B. S. London) and prælongus. I have seen no example from the North Highland province; but Dr. George Johnston informed me that he had seen specimens which were gathered in Caithness by Mr. Tyacke. If P. fluitans of the Flora of Northumberland and Durham has been correctly referred to P. rufescens, the altitude above indicated may probably be doubled; but it is more likely to be P. oblongus.

1132. POTAMOGETON NATANS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Lacustral. This is generally believed to be the commonest species of its genus in Britain, and the fact may be so. But as P. plantagineus and P. oblongus have been always confused, more or less, with the present species, some degree of uncertainty will attach to the distribution, as above drawn out from the records of its localities. My herbarium has no specimen from any county more northerly than Kincardine.

1133. POTAMOGETON OBLONGUS, *Viv.*

Area 1 2 3 * 5 * 7 8 9 10 * 12 * 14 15 16 17 18.
South limit in Devon, Isle of Wight, ——— ?
North limit in Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, or thereabouts, in East Highlands.
Range of mean annual temperature 51—41.

Native. Lacustral, Uliginal. The localities of this species are much confused with those of three other species,—natans, heterophyllus, rufescens. When growing out of water, in swampy spots on our heaths and moors, or even in still and shallow waters, it has closely the form and appearance of P. natans, and has doubtless often been so named. The fluitant form, before mentioned under

the head of P. heterophyllus, has certainly been occasionally referred to that species, occasionally to the present; and perhaps it may still include the approximating forms of both species, if really not a transition state between them. With P. rufescens the present species would seem to have little likelihood of being confused; but the use of the name "fluitans" has apparently led to confusion; that name being sometimes applied to examples of P. oblongus, sometimes held synonymous with rufescens by English botanists. Perhaps actually more general than P. natans, although not so recorded.

1134. POTAMOGETON PLANTAGINEUS, *Ducr.*

Area * 2 3 4 * 6 7 8 * 10 11 12 * 14 * 16.
South limit in Hants, Kent.
North limit in Argyle (Oban), Berwick.
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—57. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel.
Ascends to 300 yards, or upwards, in Tyne.
Range of mean annual temperature 51—45.

Native. Lacustral or Uliginal. Hitherto this has been reported only from about twenty counties; but as few English botanists distinguish it from P. natans and P. oblongus, and as the recorded counties are scattered through much of Britain, many intermediate localities may reasonably be expected.

1135. ZOSTERA MARINA, &c.

(See pages 25—26.)

1136. RUPPIA MARITIMA, *Linn.*
1136, b. RUPPIA ROSTELLATA, *Koch.*

Area 1 2 3 4 * 6 7 * 9 10 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 16. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral (lacustral). Although the two plants, which are here united under one head, may really be distinct species, their recorded localities cannot at present be distinguished; most of them having been assigned to Ruppia maritima, as a name for either or both of the alleged species. Not improbably, R. rostellata may be found the more widely distributed of the two. According to Mr. J. T. Syme, R. rostellata occurs in Britain northward to Orkney; and by the 'Summa Vegetabilium,' it would seem to be rather more widely spread than is the R. maritima in Scandinavia.

1137. ZANNICHELLIA PALUSTRIS, *Linn.*
1137, b. ZANNICHELLIA PEDUNCULATA, *Reich.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 * * 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 70.

Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Lacustral. Again we have two or more alleged species combined as one; but in this instance by almost general consent of British authors. Judging by the recorded localities, including those communicated to me in manuscript notes, the Zannichellia occurs in nearly all the English counties, although known only in seven or eight of the Scottish counties. Northward from the vicinities of Edinburgh and Glasgow, Sutherland and Orkney are the only recorded counties, and both on the authority of Mr. J. T. Syme, who has already done much towards increasing our knowledge of the local botany of Britain, and from whom botanical science is likely to receive much more aid hereafter.

1137, c. ZANNICHELLIA POLYCARPA, *Nolte*.

Area [?]

Incognit. Given by Dr. Walker Arnott in the British Flora, sixth edition, but without the indication of any locality for it. Hence it was taken into the third edition of the 'London Catalogue of British Plants.' On the other hand, in the Manual of British Botany, third edition, Mr. Babington writes, that the Z. polycarpa of Nolte "has not been found in Britain."

1135, c. ZOSTERA NANA, *Roth.*

Area * 2 * * * * * * * * 11.
South limit in Dorset, Isle of Wight, Sussex.
North limit in Northumberland.
Estimate of provinces 2. Estimate of counties 4.
Latitude 50—56. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in Channel province.
Ascends, at the sea level, to Tyne province.
Range of mean annual temperature 51—48.

Native. Littoral. I am yet aware of localities for this species in very few counties only; namely Dorset (Mr. Borrer), Isle of Wight (Dr. Salter), Hants (Dr. Bromfield), Sussex (Mr. Borrer), Northumberland (Mr. Storey). To these may perhaps be added the county of Caermarthen, although the "much smaller plant than Z. marina" (Dillwyn's Materials) observed by Mr. Motley, washed on the beach at Pembrey, in abundance, has been referred to Z. angustifolia. The estimate taken above is made to express only the ascertained facts; it being impossible at present to make any other estimate beyond sheer guesswork. The species may eventually be found far more frequent on the English shores than is at present known; and it is not unlikely that some of the localities heretofore reported for Z. marina, may belong to this smaller species. It is reported to be washed up by tides on the shores of Kent; but it does not appear to have been actually found growing there.

1135. ZOSTERA MARINA, *Linn.*
1135, b. ZOSTERA ANGUSTIFOLIA, *Roth.*

Area 1 2 3 4 * 6 7 * 9 10 11 * 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula,
Ascends, at the sea level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. Records for this plant are wanting in three of the provinces; namely, those of Severn, Trent, Lakes. The limited coast-line of the first may render it a real exception to the provincial generality of the species; but the Zostera may still be expected to occur on the very imperfectly examined shores of the two other provinces. The actual number of counties, at present on record for Zostera marina or angustifolia, scarcely amounts to 40. In referring this very littoral plant to the superagrarian zone, it will of course be understood to imply northern latitude, not elevation above the sea.

1137*. NAIAS FLEXILIS, *Rostk.*

Hibernian. Recently discovered in Ireland, by Mr. Daniel Oliver, who found it near Roundstone, Cunnemara, Galway. Likely enough to be found in England.

1138. LEMNA MINOR, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Lacustral. Very general through Britain, unless some of the northern counties should be excepted. Mr. Syme reports it as common in Orkney, and it is marked in the list of British plants checked for the county of Ross, and given to me by the Rev. George Gordon. These are the only authorities that I am aware of, for the two most northerly provinces; though it may likely enough have been passed unobserved or unrecorded in other parts of those provinces. Rev. G. Gordon indicates it as frequent, though not among the most frequent, plants of Moray.

1139. LEMNA GIBBA, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 * * * 14.
South limit in Devon, Isle of Wight, Kent.
North limit in Edinburgh;—or York, Lancaster.
Estimate of provinces 10. Estimate of counties 40.
Latitude 50—56 (55). English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Lacustral. Said to occur at Lochend and Duddingston Loch, Edinburgh, which appears to be the only place where it is known in Scotland; if, indeed, it does truly grow there. It is reported to be found near Liverpool, Warrington, Manchester, York, Beverley, and Grimsby. Are there not other localities, to the northward of the line that would be traced across England by connecting these six towns?

1140. LEMNA POLYRHIZA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 * * * 14.
South limit in Devon, Isle of Wight, Kent.
North limit in Edinburgh;—or York, Lancaster.
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Lacustral. Almost the same apparent limit northward may be traced for this species, as for the preceding, with the single outlying locality of Edinburgh. It is, however, more frequently included in local lists of English plants, and would seem to occur more commonly, than the L. gibba. At the same time, it should be remembered, that the latter is more likely to be overlooked, on account of its closer resemblance to L. minor. Probably enough, L. polyrhiza will yet be found in other

localities between York and Edinburgh, and also northward of Liverpool and Manchester, on the westward side of the island. There can be little doubt that the southern line will be carried into Cornwall, when the plants of that county are more completely ascertained.

1141. LEMNA TRISULCA, *Linn.*

Area 1 2 3 4 5 6 7 8-9 10 11 * * 14 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Forfar.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Lacustral. Ascends to the confines of the superagrarian zone by its localities in Forfarshire, and may perhaps eventually be found to belong to the British, rather than to the English, type of distribution; although, while the name appears in only four Scottish lists (Berwick, Roxburgh, Edinburgh, Forfar), and for counties all in the southern half of Scotland, the species will of course be assigned to the English type. On the western side of the island, I find no locality reported farther northward than South Lancashire; but have ventured to include the two next provinces, Lakes and West Lowlands, in the provincial estimate.

1142. ARUM MACULATUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 (15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Edinburgh, Lanark;—(or Perth, Fife).
Estimate of provinces 14. Estimate of counties 60.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Sylvestral, Septal. This plant is found in almost all the counties of the first 12 or 14 provinces. In Scotland it becomes one of the rarer plants; and I am not yet aware of any locality northward of the Clyde and Forth, in which its genuine nativity is free from doubt or question. It occurs as far north as Moray, where it is marked as doubtfully indigenous, by the Rev. George Gordon. In the Flora of Aberdeen, it finds place only as an introduced plant. In that of Forfar, it is given as "naturalised in various places." There remain two localities, "Inchmahone, in the Loch of Monteith," and Cleish woods, both in the East Highland province, and both being places to be suspected; moreover, neither of them resting on sufficient authority, when the question is not one of nomenclature, but one of nativity.

1143. ACORUS CALAMUS, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 * * (13).
South limit in Devon, Dorset, Hants, Essex.

North limit in York, Lancaster;—(or Renfrew, Ayr.)
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, more or less, in England.
Range of mean annual temperature 51—48.

Native. Paludal. Apparently a true native of Britain, although probably introduced to several of its present localities. The Scottish locality or localities are open to much suspicion. It is said to grow at Lochwhinnoch and Castle Semple Loch, in Renfrewshire; which may mean only one single station. And when we find the same locality also reported for Viburnum Lantana, Œnothera biennis, Lonicera Caprifolium, Valeriana pyrenaica, and Atropa Belladonna,—unlikely plants to be natives there, we are easily led to suspect the introduction also of the Acorus. A specimen is in my herbarium, from Mr. James Smith, labelled "Ayrshire;" but Lochwhinnoch being on the confines of Renfrew and Ayr, this third nominal station may perhaps still be the same with the other two. Mr. Borrer deems the plant introduced into Sussex. Dr. Bromfield had some suspicion that the Acorus was not an aboriginal native of England; and he was not inclined to err on the side of repudiating plants.

1144. SPARGANIUM NATANS, *Linn.*
1144 *. SPARGANIUM MINIMUM, "*Fries.*"

Area general.
South limit in Somerset, Dorset, Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.

Estimate of provinces 18. Estimate of counties 70.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in E. Highlands (Syme).
Range of mean annual temperature 51—43.

Native. Paludal, Lacustral. These two plants, the larger and smaller forms, hitherto included under one name by British botanists, are separated in the third edition of the Manual of British Botany, following Fries. The larger form approximates to S. simplex in size, and in having the lower heads of flowers stalked; and possibly it may have been sometimes passed by for the S. simplex. Although I am much inclined to believe in two distinct species here, I am not able to separate their recorded localities, hitherto published under the one name of S. natans. Specimens of true S. natans (the larger form) are in my herbarium from Northumberland (Mr. Storey), Surrey and Argyle (H. C. Watson), Aberdeen (Professor Dickie; Mr. J. T. Syme), Orkney (Dr. Gillies). All my other specimens belong to the dwarf form, or S. minimum, which sometimes is seen left out of water, and show an area for it extending from Suffolk to Sutherland. Glen Clunie, in which Mr. Syme finds Sp. natans, is the highest locality yet known to me. Adding together the preceding localities, those in Babington's Manual, and those mentioned by Mr. J. T. Syme in Bot. Gaz. iii. 158, we have provinces—3, 7, 11, 13, 15, 16, 18—for S. natans apart from S. minimum.

1145. SPARGANIUM SIMPLEX, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Argyle;—[or, Orkney; Neill.]
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Paludal. I have seen no specimen of this plant, gathered farther northward than the counties of Edinburgh and Wigton; and it will perhaps eventually appear that some of the Highland localities, reported for the present species, do truly belong to the Sp. natans, larger form. Under this doubt, I have ventured to reject the authority of Dr. Neill for its occurrence in Orkney, where other botanists find apparently only Sp. natans. For the North Highland province I have but a single authority, the checked catalogue of Ross-shire plants, from the Rev. George Gordon. For the East and West Highlands there are several authorities.

1146. SPARGANIUM RAMOSUM, *Huds.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney.
Estimate of provinces 18. Estimate of counties 75.

Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Paludal. The commonest of the three or four species in England; but apparently rare in the North Highlands and North Isles, and perhaps so in the West Highlands also. I have a specimen among Orkney plants, which were supposed to have been gathered by Dr. Gillies; and it is included in his manuscript Flora of Orkney, as having been seen there by himself. The North Highland province stands on the authority of Mr. Gordon's Catalogue of Ross plants. Professor Balfour reports it as found by himself in Islay and Cantire. On good authority, it is said to occur in many parts of the East Highland province.

1147. TYPHA LATIFOLIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Forfar, Renfrew. [Orkney.]
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—58 [60]. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal. So local in the only Highland province for which I am prepared to cite authorities, as almost to justify its limitation to the English or southern type of distribution, rather than the assignment of it to the British

or most general type. Its former existence in Orkney, testified by Dr. Neill,—and where it has become extinct simply through drainage, according to Dr. Gillies,—seems to warrant its reference to the general type, notwithstanding its present more restricted area, and earlier northern limit. Some few localities in Forfarshire and Moray are all that I am aware of northward of the Forth, unless Fife is also to be added as another county for it, as suggested under T. angustifolia.

1148. TYPHA ANGUSTIFOLIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 * [15].
South limit in Cornwall? Isle of Wight, Kent.
North limit in Dumfries, Durham;—[or Fife.]
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Paludal. I have seen no Scottish specimen of this species. In Hooker's Flora Scotica, it is said to occur abundantly in the Loch of Lindore, Fife, on the authority of Mr. D. Don; whence, it may be presumed, that T. angustifolia *or* T. latifolia does grow there. The present species is also said to grow in Loch-maben, Dumfries (Mr. Gray, Mr. Cruickshank, Mr. G. Lloyd), and in the Manse loch, Colvend, Kirkcudbright (Mr. Peter Gray). As Loch-maben is slightly above the latitudinal parallel of 55, the limit of the species is carried up to 56, the first line northward of its most northerly (admitted) locality, in accordance with the rule of avoiding fractions of a degree in giving the latitudinal ranges of plants.

Typha minor, *Sm.*

Area [3 * 10].

Incognit. This species was long retained in the Floras of Britain, in consequence of Dillenius reporting that it had been found on Hounslow Heath, Middlesex, by a Mr. Dandridge. In the New Botanist's Guide, a second locality was added, through an inadvertence there suggested; namely, in the mere, near Scarborough, Yorkshire. In Hall's Flora of Liverpool, it is stated that a specimen is preserved in the Herbarium at the Botanic Garden of that town, which was brought from a marl-pit, north of Little Crosby, on the Lancashire coast, in 1801. In the more recent Flora of Liverpool, published by Dr. Dickinson, the Author says that he has been unable to find that any other specimen of the plant had ever been gathered there. But Dr. Dickinson does not inform us whether he had himself seen the one specimen in the herbarium referred to; and I fear that Mr. Hall was not very competent to name species in doubtful cases. More recently, Dr. Bromfield announced (Phytol. iii. 1007) that he had actually seen a specimen, gathered in Kent, by the late Mr. David Don; and, as a sort of confirmation, he referred to Smith's 'Catalogue of the Rarer Plants of South Kent,' in which T. minor is reported to grow with T. latifolia, in a dyke at West Ham. But in reference to that announcement, Mr. T. B. Flower wrote to me in these terms:—"This is an error, and ought to be corrected. Prof. Don showed me the specimen which he had supposed to be T. minor, but afterwards had altered his opinion, and believed it a small form of T. angustifolia."

1149. ERIOCAULON SEPTANGULARE, *With.*

Area * * * * * * * * * * * * * * 16.
South limit in the Isle of Coll, West Highlands.
North limit in the Isle of Skye, West Highlands.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—58. Local (Scottish) type of distribution.
Agrarian region. Superagrarian zone.
Descends to the coast level, in West Highlands.
Ascends, probably, but little above the coast level.
Range of mean annual temperature, about 47.

Native. Lacustral. Long known as an inhabitant of one or more lakes in the Isle of Skye. The Author of the British Flora adds also "Coll, and a few of the neighbouring islands of the Hebrides." I know not which of the neighbouring isles are here intended, nor on what personal authority the statement is made. The actual narrow area of this plant places it most nearly among those of the Scottish type; while its extension also into the West of Ireland brings it so far nearer to the Atlantic (or Western) rather than confirming it to the Scottish (or boreal) type. It is, indeed, anomalous in the European Flora, and constitutes one of the few connecting links between the botany of Eastern America and Western Britain, like the Neottia gemmipara and (if really indigenous) the Sisyrinchium anceps of Ireland.

1150. JUNCUS FILIFORMIS, *Linn.*

Area * * [3 * * * * * 9] * * 12 * * [15 * * 18].
South limit in Westmoreland.
North limit in Cumberland.

Estimate of provinces 1. Estimate of counties 2.
Latitude 54—55. Local (Scot.) type of distribution.
Agrarian region. Superagrarian zone.
Descends nearly to the coast level (Windermere).
Ascends to 150 yards (Thirlmere, Cumberland).
Range of mean annual temperature 47—46.

Native. Paludal. A very local plant, known certainly on the margins of Windermere, Thirlmere, and Derwentwater, only. Has been said to grow near London (Cooper's Flo. Metrop.), in Cheshire (Mr. Bradbury, in B. G.), on Ben Lawers (Mr. Dickson), in several parts of Scotland (Mr. George Don), and in Orkney (Lowe's List); but all these are too uncertain for reliance, while the indifferent authorities for them remain unsupported by the testimony of more accurate or more faithful observers.

1151. JUNCUS CONGLOMERATUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 yards, or upwards, in E. Highlands.
Range of mean annual temperature 52—44.

Native. Paludal, Inundatal, &c. In my earlier tours into the Highlands, while a young botanist, I made various notes which would seem to trace this species up to 400 or 500 yards of altitude. But I have since seen reason to doubt whether I then correctly distinguished between J. effusus and the species here under consideration; the

panicle of the former being usually much less effuse on the northern hills, than is the case in the more southern and lowland counties. Dr. Dickie, too, gives the upper limit of J. conglomeratus at 700 yards (London Journal of Botany); but J. effusus, certainly the commoner species in the Highland counties, is not named in his list. The true upper limit remains to be determined by future observation.

1151*. JUNCUS EFFUSUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Paludal, Inundatal, &c. Rises to the extreme limit of the lower arctic zone, and perhaps even enters slightly within the midarctic; its upper limits in the East Highland province forming a wavy line varying from 600 to 800 yards above the sea; the more frequent points of cessation on the mountain acclivities being at about 700 yards. In North Wales, it probably attains full 900 yards. Balfour and Babington enumerate J. conglomeratus, and omit J. effusus, in their list of Hebridean plants. If either of the two be really absent, I should expect to find J. effusus the one growing there, and J. conglomeratus the one absent. See also the remarks under the preceding species.

1152*. JUNCUS DIFFUSUS, *Hoppe.*

Area * 2 3 4 5 * * 8 * 10 11 * * * 15.
South limit in Isle of Wight, Sussex.
North limit in Kincardine ?—or, Northumberland.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel province.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Paludal, Inundatal, &c. After having been first announced as British, on the faith of specimens said to have been sent from Kincardineshire, to Mr Sonder of Hamburgh, various other localities were soon ascertained and announced for this species in English counties; but I am not aware that it has hitherto been verified in Kincardine, or found in any other county of Scotland. It has been reported from the Isle of Wight and mainland Hants (Dr. Bromfield), Sussex (Mr. Borrer), Surrey (H. C. Watson, &c.), Herts (Rev. W. H. Coleman !), Essex (Mr. G. S. Gibson), Norfolk (Mr. James Backhouse,—but said by Mr. Notcutt to be an error), Huntingdon (H. C. Watson), Warwick (Rev. A. Bloxam), Hereford (Mr. W. H. Purchas), Leicester (Rev. A. Bloxam), Lincoln (Rev. R. H. Webb !), York (Mr. G. S. Gibson !), Northumberland (Mr. D. Oliver !), and Kincardine (as above). I have examined numerous wild plants of J. diffusus, and cultivated it two years in my garden, without being able to find any seeds that appeared full grown and perfect. My impression is, that J. diffusus is a sterile variety of J. effusus, and that it has no affinity to J. glaucus, either as hybrid or variety

of the latter. The late estimable Dr. Bromfield thought J. diffusus a hybrid between J. glaucus and J. effusus; but with no sufficient grounds to warrant the inference. Indeed, although endowed with considerable acuteness of mind, and a painstaking observer in botany, Dr. Bromfield's mode of reasoning was often shallow and illogical; drawing inferences from imperfect or partial data, and often such as by no means warranted the conclusions formed on them, rather than from them. Making some allowance for this their defect, the writings of Dr. Bromfield were valuable contributions to the local botany of England; and his early decease was truly a loss to botanical science.

1152. JUNCUS GLAUCUS, *Sibth.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 ** [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Kincardine, Forfar, Perth, Lanark.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Inundatal, &c. The name of this species is mentioned in a list of Orkney plants, on the authority of a lady stated to be well acquainted with plants botanically. But those Isles are so far northward of any other locality on record, that it appears better to consider that habitat non-established, until some further information shall have been obtained respecting the plant thus named. Possibly J. balticus may occur in Orkney, and have been mistaken for J. glaucus.

1153. JUNCUS BALTICUS, *Willd.*

Area * * * * * * * * * * * * * * 15 * 17 18.
South limit in Forfar, Kincardine.
North limit in Hebrides, North of Sutherland.
Estimate of provinces 3. Estimate of counties 8.
Latitude 56—59. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends to the sea level, in East Highlands.
Ascends, at the coast level, to North Isles.
Range of mean annual temperature 48—46.

Native. Littoral and Sub-littoral. A coast plant usually, but found occasionally about inland lakes ten or twelve miles from the sea; as at the Loch of Drum, on the Aberdeenshire side of the river Dee, although politically within the county of Kincardine. The coast of Forfarshire has been considered within the midagrarian zone; and hence the species is indicated as descending southward into that zone. Besides the four counties already mentioned, this species has been reported from those of Banff, Moray, and Ross.

1154. JUNCUS MARITIMUS, *Sm.*

Area 1 2 3 4 * 6 7 8 9 10 11 * 13 * 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the sea level, in the Peninsula.

Ascends, at the coast level, to East Highlands.

Range of mean annual temperature 52—47.

Native. Littoral. Doubtful whether this species should be referred to the English or British type of distribution; being assimilated to the former by its rarity on the coasts of Scotland, and to the latter by its extension northward into Moray. The Rev. G. Gordon says that it is frequently met with inland.

1155. JUNCUS ACUTUS, *Linn.*

Area 1 2 3 [4 5] 6 7 * * * * [12 13].

South limit in Cornwall, Dorset, Sussex, Kent.

North limit in Caernarvon. [Flint? Norfolk?]

Estimate of provinces 5. Estimate of counties 12.

Latitude 50—53. Atlantic type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the sea level, in the Peninsula.

Ascends, at the sea level, to North Wales.

Range of mean annual temperature 52—50.

Native. Littoral. Occasionally confused with J. maritimus; and, through similarity of name, even with J. acutiflorus. It has been reported from Cornwall (Martyn), Devon (H. C. Watson), Somerset (Rev. J. Collins), Dorset (Mr. G. S. Gibson), Sussex (Mr. Borrer), Kent (— S. Buckland!), Glamorgan (Mr. S. P. Woodward!), Caermarthen (Mr. Motley), Pembroke (Mrs. Russell!), Merioneth (Mr. J. E. Bowman), and southern point of Caernarvon (Rev. H. Davies, in B. G.). To these counties others may be added, which will require verification; namely, Suffolk (Mr. Davy, in B. G.), Norfolk (Mr. Crowe, in B. G.), Gloucester (Cheltenham;—Mr. Buckman), Flint (Mr. Grif-

fith, in B. G.), Lake-Lancashire (Mr. Woodward, in Eng. Flora), and Kirkcudbright (Mr. G. N. Lloyd;—whose specimens were J. maritimus).

1156. JUNCUS ACUTIFLORUS, *Ehrh.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Paludal. Ascends to the extreme limits of the agrarian region, and perhaps may be found clearly within the inferarctic zone. If it occur in Middlesex, Huntingdon, and Bedford, the estimate of 82 counties will be correct; but if absent from any of those three counties, an equivalent reduction must be made in the estimate. In the Flora Bedfordiensis, the application of names in this genus is somewhat confusing; and perhaps I have not modernized them correctly, in supposing the present species not intended to be recorded there.

1157. JUNCUS LAMPROCARPUS, *Ehrh.*
1157, b. JUNCUS NIGRITELLUS, *Don.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Channel.
Ascends to 800 yards, in E. Highlands (Dickie).
Range of mean annual temperature 52—39.

Native. Paludal, &c. I do not find among my own notes any mention of this species above 400 yards of elevation; but as Professor Dickie indicated it so high as 800 yards, I adopt his record as the basis and authority for the altitude, zones, and temperature, here given so much above what are warranted by my own notes. Whether J. nigritellus be correctly referred to J. lamprocarpus, or not so, I must confess much doubt. It is an imperfectly understood species, if really a distinct one.

1158. JUNCUS OBTUSIFLORUS, *Ehrh.*

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 [15].
South limit in Somerset, Dorset, Wight, Kent.
North limit in Haddington, Linlithgow, Kirkcudbright.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel and Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. Either much overlooked, or not a common plant in England; while in Scotland it would seem to be quite local. In addition to some 30 or more counties of England, it has been reported from those of Kirkcudbright (Mr. G. N. Lloyd), Wigton (Prof. Balfour !), Haddington (Prof. Balfour !), Edinburgh (Mr. Thomas

Edmondston,—"Pentland Hills"), Linlithgow (Woodf. Cat.), and Forfar (Hook. Scot.); Edinburgh and Forfar requiring confirmation. Actual records will thus not justify a higher estimate than 40 counties; but that of 50 might be nearer the fact, because J. obtusiflorus may more readily be overlooked than plants with conspicuous flowers; and even if seen, it may be passed by for some other and commoner species; as probably was done by myself, while a young botanist, for it was late before I found and recognized it.

1159. JUNCUS SUPINUS, *Mœnch.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Paludal, &c. No locality for this species having been ascertained in Huntingdon or Northampton, and it being rare or local in some of the adjacent counties, the estimate of 80 might perhaps have been more correct than that of 82. But in the case of species known to occur in all the counties for which our lists may be deemed most complete, I take the highest estimate, unless some strong reason appears for excluding any of the counties.

1160. JUNCUS COMPRESSUS, *Jacq.*
1160, b. JUNCUS CŒNOSUS, *Bich.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsulâ.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.
Native. Littoral, Paludal. The recorded localities for these two alleged species cannot be clearly separated; nor am I at all convinced that they really are two distinct species. The provincial area is nearly the same for each of them, so far as I am able to distinguish between the species intended by authors and the authorities for localities. But J. cœnosus is unrecorded from the Severn province, and J. compressus perhaps so from the West Lowlands. Both are reported to occur in Cornwall, and both in Shetland. Neither of them appears to have been recorded from the Lake and North Highland provinces.

JUNCUS TENUIS, *Willd.*

Area [15].
Incognit. Said to have been found by George Don, the elder, "by a rivulet, in marshy ground, among the mountains of Clova, near the summits." But such a record is worthless in science, until confirmed by some more accu-

rate botanist of the present time. And although J. tenuis is not a very unlikely species to occur in Britain, it should be looked for in Ireland or England, rather than in Scotland.

1162. JUNCUS BUFONIUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.
Native. Paludal, Inundatal, &c. A very common species, but remaining still unrecorded from 15 or 20 counties, although there is no reason to suppose it really absent from those counties, which remain least known botanically. Not unlikely to be found in the inferarctic zone.

1163. JUNCUS SQUARROSUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1100 yards, in East Highlands.

Range of mean annual temperature 52—36.

Native. Ericetal. Possibly this may occur in every county; but at present it remains unrecorded from some of the less fully examined counties of the Thames and Ouse provinces; besides those of other provinces, from which it is still less likely to be quite absent. Rarely seen above 1000 yards of elevation.

1164. JUNCUS CASTANEUS, *Sm.*

Area * * * * * * * * * * [11] * * * 15.
South limit in Perth, Forfar.
North limit in Aberdeen.
Estimate of provinces 1. Estimate of counties 4.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 800 yards, or lower, in East Highlands.
Ascends to 1000 yards, or upwards, in same province.
Range of mean annual temperature 39—36.

Native. Uliginal. Very local; and usually in sparing quantity in its few localities. I do not know in what county to place the Rev. Dr. Stewart's locality of "Ben Challum," copied into the Flora Scotica and English Flora. Among the localities in Hooker's Flora Scotica, is one that may intend a higher altitude than above given; namely, "near the summit of Ben Lawers." Unless some mistake occurred, in regard to the vaguely indicated locality, where the specimen of the Rev. Mr. Harriman was picked, this species did formerly grow in "the county of Durham;" although not found there for many years past, or recorded by any second collector.

1165. JUNCUS TRIFIDUS, *Linn.*

Area * * * * * * * * * * * * * * * 15 16 17.
South limit in Dumbarton, Perth, Forfar.
North limit in Sutherland.
Estimate of provinces 3. Estimate of counties 10.
Latitude 56—59. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 550 yards, in North Highlands.
Ascends to 1400 yards, in East Highlands.
Range of mean annual temperature 39—32.

Native. Rupestral, Glareal. Frequent on the rocky and gravelly summits of the Highland mountains, descending to 700 or 650 yards in the East Highlands, and still lower on Ben Hope in the North Highlands. It thus passes slightly and rarely within the limits of the inferarctic zone. Professor Dickie thinks that he saw it, in a barren state, at the very summit of Ben-na-muic-dhu, nearly 50 yards higher than the altitude above given; and I found it rather above 1400 yards on the same hill myself.

1166. JUNCUS CAPITATUS, *Weigel.*

Area [3 * 15].

Sarnian. "Sandy ground in Guernsey and Jersey" (Babington's Manual of British Botany). Also, "on the highest parts of Ben Lawers," found by George Don, according to Hooker's Flora Scotica. But this most unlikely habitat appears to have been made only by an error

of nomenclature. And in the vicinity of London, according to Mr. Daniel Cooper.

1167. JUNCUS BIGLUMIS, *Linn.*

Area * * * * * * * * * * * * * * * 15 16.
South limit in Arran ? Stirling, Perth, Forfar.
North limit in Moray (Cairngorum), Inverness (Nevis).
Estimate of provinces 2. Estimate of counties 6.
Latitude 56—58. Highland type of distribution.
Arctic region. Superarctic zone.
Descends to 900 yards, in East Highlands.
Ascends to 1100 yards, in same province.
Range of mean annual temperature 38—36.

Native. Uliginal. A very local plant, and satisfactorily ascertained in the East Highland province only. It occurs on several parts of the Breadalbane mountains, near Loch Tay, in Perthshire. And it has been reported (with more or less suspicion of inaccuracy in several of the localities) from Goat Fell, in Arran; from the Clova Mountains, in Forfar; from Glass Mhiel, on the confines of Forfar and Aberdeen; from Cairngorum, at the junction of Aberdeen, Banff, and Moray; from Ben Nevis, in West Inverness. Also, from the very improbable station of "Links of St. Fergus," by Mr. Murray, in Flora Scotica, the authority for Arran and Ben Nevis. Mistakes may readily be made between this and J. triglumis, from the similarity of the plants, and similarity of the written names. Perhaps this species may occur both higher and lower than is indicated above.

1168. JUNCUS TRIGLUMIS, *Linn.*

Area * * * * * * 7 * * (10) 11 12 * * 15 16 17 18.
South limit in Caernarvon, Durham.
North limit in Shetland, Sutherland.
Estimate of provinces 8. Estimate of counties 20.
Latitude 53—61. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 350 or 400 yards, in East Highlands.
Ascends to 900 yards, in the same province.
Range of mean annual temperature 43—38.

Native. Uliginal. Whether this species should be considered to descend clearly within the superagrarian zone, is yet doubtful. It certainly grows at a lower elevation than is attained by some ascending plants, which in this work have not been deemed to rise above the agrarian region. But as formerly mentioned (Vol. i. p. 41) it is difficult to draw close comparisons between the lower line of one plant, and the upper line of another, without making mathematical exactness interfere with the natural associations of different species, in climate and situation of growth. There may appear something strange, in the inclosure of the Humber province (10) for J. triglumis; but this is done on the faith of a note by Mr. Moore, in a manuscript list of Yorkshire plants, to this effect;—"originally planted on Cronkley Fell, but wild on the opposite Fell." Juncus triglumis is omitted from the published Flora of Yorkshire.

1169. LUZULA SYLVATICA, *Bich.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, in the West Highlands.
Range of mean annual temperature 51—37.

Native. Sylvestral, Rupestral. I have only one note of seeing this species above 900 yards of elevation, and clearly within the superarctic zone; namely, "above 3000 feet, on Ben Nevis," so long ago as 1832. Although I was a very young botanist at that time, it is difficult to fix upon any other plant, likely to occur so high, and likely to be mistaken for L. sylvatica. I have since seen it at 800 and 900 yards, on several hills of the East Highlands; but where species generally rise to a higher altitude than they do in the West Highlands. The altitude on Ben Nevis is not so unlikely as to demand its rejection, and yet it would be desirable to have this verified afresh, or confirmed by an equal altitude observed elsewhere. L. sylvatica is probably scarce in the provinces of Thames and Ouse, and may be quite absent from some of their counties.

1170. LUZULA PILOSA, *Willd.*
1170, b. LUZULA BORRERI, *Bromf.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, or upwards, in E. Highlands.
Range of mean annual temperature 52—42.

Native. Sylvestral. This species will likely be found in the inferarctic zone, and 100 or 200 yards higher than the indication of altitude above given. L. Borreri is an obscure plant, first noticed by Dr. Bromfield, in the Isle of Wight. He transmitted specimens to me, and in return I immediately sent him others from Surrey, which he admitted to be the same form or species. It was soon afterwards found in Sussex, by Mr. Borrer, and in Herefordshire, by Mr. Purchas. It was taken up as a species in the third edition of the Manual of British Botany, where Mr. Babington has unfortunately described the seeds of ordinary L. pilosa for those of L. Borreri. This error, originating in an accidental inadvertence of Mr. Purchas, has been corrected by the latter botanist in the Botanical Gazette, iii. 99. But Mr. Purchas has there described the supposed seeds of L. Borreri in terms which do not accord with my own observations on half-grown seeds of a living plant in my garden, received from Dr. Bromfield; but which has not perfected its seeds during

the two seasons in which I have had it under view. I consider the alleged species to be exceedingly dubious.

1171. LUZULA FORSTERI, *DC.*

Area 1 2 3 * 5 6 * * * * * * [13 * 15].
South limit in Devon, Isle of Wight, Kent.
North limit in Cardigan, Worcester, Essex.
Estimate of provinces 6. Estimate of counties 20.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Sylvestral. Three counties have been reported for this species, northward of those above indicated for its northern limit. Dr. Hewgill reported it as found in Staffordshire, a probable habitat; but Dr. Garner has sought in vain for the species in the alleged locality of "Dymingsdale." According to the British Flora, it has been found in Ayrshire, "on the banks of the Doune," by Mr. James Wilson, a young botanist. And George Don said that he had found it "in fir woods east of Forfar." These two Scottish localities, so far distant from the English counties in which L. Forsteri is certainly known, will require verification.

1172. LUZULA CAMPESTRIS, *Willd.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland? Orkney? Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferarctic—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, or upwards, in E. Highlands.
Range of mean annual temperature 52—37.

Native. Pascual. In many published floras and catalogues, and in my own earlier manuscript notes, equally as in many of those communicated to me by other botanists, no distinction is made between L. campestris and congesta or multiflora. This circumstance must unavoidably throw some degree of uncertainty on the distribution of L. campestris, as above shown; the more especially as L. congesta is perhaps the more frequent species in the northern counties. L. campestris grows on the summit of Carnedd David, in Caernarvonshire, nearly 1100 yards above the sea, and perhaps strictly within the superarctic zone; and probably it ascends into the same zone on the Breadalbane mountains, in Perthshire. Omitted from the Flora of Shetland, as is also L. congesta; but it was included in Edmondston's List of Shetland plants, published in the Annals of Natural History; so that its omission from the Flora of Shetland, by the same author, may have been an inadvertence, similar to that which caused the omission of Rumex Acetosa and R. Acetosella from the same work.

1172*. LUZULA MULTIFLORA, *Lej.*
1172*, b. LUZULA CONGESTA, *Sm.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 51—37.

Native. Sylvestral, Ericetal. For reasons mentioned under L. campestris, the distribution of this species is less fully recorded than that of the other, with which it has often been confused or combined. Still, it has been recorded from fifty or sixty counties, and may fairly be expected in all the rest, not excepting Cornwall and Shetland. I have only one note of it, L. multiflora, above 650 yards of elevation; but this may perhaps be accounted for in the remarks made under L. campestris.

1173. LUZULA ARCUATA, *Hook.*

Area * * * * * * * * * * * * * * 15 * 17.
South limit in Aberdeen, Forfar?
North limit in Sutherland.
Estimate of provinces 2. Estimate of counties 3.
Latitude 56—59. Highland type of distribution.
Arctic region. Superarctic zone.
Descends to 1000 yards (?), in the North Highlands.
Ascends to 1450 yards, in East Highlands.
Range of mean annual temperature 35—32.

Native. Ericetal or Rupestral. Very local in Britain. Its chief habitat appears to be on Ben-na-muic-dhu and other summits of the Cairngorum group, about the junction of Aberdeen and Moray. It has likewise been found on Loch-na-gar, Aberdeenshire, by Professor Balfour. By Professor Graham, in his 'Excursion' of 1833, it was

reported to have been found in Sutherland, on the summit of Fonniven, and also on the ridge leading to the top of Ben More, Assynt, ascending from Inchnadamf. It is further said to have been seen on the Clova mountains, in 1824, by "Hooker, Greville, Burchill, and Drummond:" is this correct? I do not know the altitude of Fonniven, or that of the "ridge" of Ben More; perhaps 1000 yards may be too low.

1174. LUZULA SPICATA, *DC.*

Area * * * * * * 7 * * * * 12 * * 15 16 17 18.
South limit in Caernarvon, Westmoreland,
North limit in Hebrides, Sutherland.
Estimate of provinces 6. Estimate of counties 15.
Latitude 53—59. Highland type of distribution.
Arctic region. Inferarctic—Superarctic zones.
Descends to 550 or 500 yards, in East Highlands.
Ascends to 1450 yards, in the same province.
Range of mean annual temperature 41—32.

Native. Ericetal, Rupestral, &c. Frequent on the Highland mountains, but very local in England and Wales. This species and L. arcuata grow on gravelly detritus, and in so far the term "glareal" might seem best to express their situations of growth. But that term having been applied to the plants of *dry* gravelly and sandy places, is not well adapted to express the natural situations of those plants that grow on the almost constantly humid gravel of the arctic region.

LUZULA NIVEA, *Desv.*

Area (15).

Alien. The introduction of this species into lists of British plants, on the most slender grounds, affords another instance of that unscientific and even culpable tendency of too many botanists, to report the circumstances of their discoveries so partially or imperfectly, as almost inevitably (though perhaps seldom intentionally) to mislead other botanists. The Luzula nivea was reported as a discovery in British botany, without any explanation or intimation to suggest its being other than a genuine native in the locality. And yet, as we have subsequently been informed, it was planted in that same locality by a gardener. It is difficult to conceive that, under such circumstances, any good botanical observer could have found the plant there, without some degree of suspicion against its true nativity being suggested to his mind, by some attendant circumstance of the situation, or the paucity of roots, or the improbability of the species being British, &c. Indeed, a hint on the latter point did accompany a report that examples had been exhibited at the Botanical Society of London, as really British productions. In the case now before us, there can be no suspicion of any intention to mislead; but there are other somewhat similar instances, where the intention to deceive was unmistakeable, in the wilful suppression of invalidating circumstances.

1175. NARTHECIUM OSSIFRAGUM, *Huds.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1050 or 1100 yards, in East Highlands.
Range of mean annual temperature 52—36.

Native. Uliginal. This is quite a common British plant, and yet is often reported 'inter rariores' by English botanists; the comparative paucity of bogs really rendering it a scarce or local plant in some of the southern counties of England. On the northern moors and mountains it forms a conspicuous portion of the vegetation, ascending slightly above the Calluna, and thus into the superarctic zone.

1176. CYPERUS LONGUS, *Linn.*

Area 1 2 3 [4 5] 6.
South limit in Cornwall, Dorset, Isle of Wight, Kent.
North limit in Pembroke, Somerset, Wilts.
Estimate of provinces 4. Estimate of counties 7.
Latitude 50—52. Atlantic (?) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 yards, less or more.
Range of mean annual temperature 52—50.

Native. Paludal. Very local; being known only in the counties above mentioned; that of Somerset long depending upon old and dubious authority, but recently confirmed by Mr. T. B. Flower; although the actual station, "in a small pond at the back of Mrs. Currey's house, at Walton in Gordano," reads rather suspiciously for an indigenous locality. The habitat of Dorset may give us a warning against too much readiness in rejecting localities reported by the older botanists, before sufficient search has been made respecting them. In the Botanist's Guide, on the authority of Pulteney, we are told, "It does not appear that it (C. longus) has been found in Purbeck, as mentioned in Ray's Synopsis, although diligent inquiry after it has not been wanting." The county of Dorset was therefore rejected; but in a letter from Mr. Hussey to Mr. Dennes, dated September 7, 1847, the writer says, "I will just mention that Cyperus longus grows at Colwell, near Swanage, in the first field after passing the turnpike gate, in going from Swanage to Studland, on the left hand—a new station for it, I believe." The counties of Norfolk and Stafford have also been reported, on insufficient authority.

1177. CYPERUS FUSCUS, *Linn.*

Area * * 3.
South limit in Surrey.
North limit in Middlesex.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level.

Ascends to 50 yards, more or less.

Range of mean annual temperature about 49.

Native. Paludal or Inundatal. Apparently still more local than the other species; having hitherto been found only in two stations; namely, in Middlesex, in "Eel Brook meadow, a marshy pasture, situate between Walham Green and Parson's Green, beyond Little Chelsea" (Mr. Edward Edwards); and in a pond at Shalford, near Guildford, Surrey, where I had the pleasure of seeing it, obligingly guided to the spot by its discoverer, Mr. Salmon.

1178. CLADIUM MARISCUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * (15) * 17.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Sutherland;—Wigton, Northumberland.

Estimate of provinces 14. Estimate of counties 25.

Latitude 50—59. English type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in Cornwall.

Ascends to 100 yards, less or more, in England.

Range of mean annual temperature 52—46.

Native. Paludal. Thinly scattered through England, and extremely local in Scotland. The only two Scottish stations now known for the Cladium, are Ravenston Loch, near Whitehorn, in Wigtonshire; and a marsh by the road-side, midway between Kylestrome and Badcal Church, in Sutherland; found in the former by Dr. G. Macnab, and in the latter by Dr. R. Graham. It did formerly occur in a third Scottish station, the Moss of Restennet, near Forfar; but drainage has there destroyed it. Thus, notwithstanding the outlying locality of Sutherland, it has

appeared better to refer this species to the English type; and this reference is further countenanced by the distribution of the species beyond Britain. I met with it in the Azore islands, far southward of Britain, but it is unknown in the islands northward of Scotland, and occurs in the Scandinavian peninsula only towards the southern extremity.

1179. SCHŒNUS NIGRICANS, *Linn.*

Area general.
South limit in Cornwall, Dorset, Hants, Herts, Suffolk.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in the West Highlands.
Range of mean annual temperature 52—43.

Native. Uliginal, &c. The estimate of 50 counties only may appear low in the case of a plant which has a provincial generality, and which is distributed from the extreme south of England to the extreme north of Scotland. But it is a plant which has usually had its localities reported by seekers for rarities, and has yet only been recorded from about 40 counties, besides two or three others in which it may have existed, although not now found in them. Possibly, increasing knowledge may eventually warrant an estimate of 60 counties, while it scarcely does so at present.

1180. RHYNCHOSPORA ALBA, *Vahl.*

Area general?
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Shetland, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Uliginal. The provincial generality for this species is rather uncertain; and it may really occur only in 17 or 16 provinces. The two possible exceptions are those of the Trent and East Lowlands. I am not aware of any precise station for R. alba in the latter province; but it is marked as a plant found beyond 16, within 30, miles of Edinburgh, in the Catalogue published by the Botanical Society of that town. Its occurrence in the Trent province is probable enough, but appears to rest only on the unconfirmed and unverified authority of Pulteney, according to our latest information (Flora of Leicestershire, p. 158, 1850). I do not find any note of a Kentish locality among my compilations.

1181. RHYNCHOSPORA FUSCA, *Sm.*

Area 1 2 * * [5] 6 * * * [10].
South limit in Cornwall, Dorset, Hants.
North limit in Glamorgan, Somerset.
Estimate of provinces 3. Estimate of counties 5.

Latitude 50—52. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, less or more.
Range of mean annual temperature 52—50.

Native. Uliginal. Very local; being limited to the five counties above mentioned, which are reported on sufficient authority. Has also been said to occur in Salop and Yorkshire; but these counties require verification, and are probably erroneous. Mr. Pascoe marks the name in a list of plants observed within five miles of Trewhiddle, near St. Austell, Cornwall. Dr. Southby and the Rev. Mr. Collins report it on Burtle Moor, Somerset. Gathered in Dorset, by the Rev. Mr. Lightfoot, and confirmed for the county by Mr. Borrer and other modern botanists. Dr. Bromfield has recorded localities in mainland Hants. In Glamorgan it has been found by Mr. Edward Forster, and perhaps other botanists.

1182. Blysmus compressus, *Panz.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 * 14 * [16].
South limit in Hants, Sussex, Kent. Cornwall?
North limit in Edinburgh, Berwick? Cumberland?
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards (?), in Humber province.
Range of mean annual temperature 50—44.

Native. Paludal. Perhaps several of the localities recorded for this species, will be found by examination of them to belong to Blysmus rufus or Schœnus nigricans,

each of which appears to have been occasionally mistaken for the present species. According to Jones (Tour) B. compressus grows on Goonhilly downs, in the Lizard, Cornwall; but no other botanist has found it there, so far as I am aware; and I saw Schœnus nigricans in the Lizard, without finding B. compressus. The Flora Bathoniensis, confirmed by Mr. R. Withers, is my only other authority for the province of the Peninsula. For each of the other provinces there are two or more authorities, until we arrive at that of the Mersey, for which we have only anonymous authority; the Author of the Flora of Liverpool enumerating localities for B. compressus, but not informing us on whose botanical testimony they are to be received; thus leaving us in the dark on the most important item of the information; namely, upon whose knowledge or ignorance of botany the alleged facts are to be credited. I visited one of the four localities reported anonymously in the Flora of Liverpool, and found Blysmus rufus, not B. compressus, on the spot indicated. Still, the B. compressus is a plant so likely to occur in Cheshire or Lancashire, that I enter the Mersey province in the line of Area, on the uncertain indication now mentioned. For a like reason the Lake province also is retained, although depending on old and indifferent authority. In Lightfoot's Flora Scotica are two very suspicious localities for B. compressus, copied into Hooker's Flora Scotica without question or doubt expressed, namely, "Dumbarton Castle, near the river side," and "in marshy places by the sides of Lochs in Islay." These two West Highland localities seem more likely to belong to B. rufus. But B. compressus certainly grows near Edinburgh, and is thus truly a native of Scotland. I know not whether any of the few stations mentioned in the Flora of Berwick are within the Scottish county, or all of them in North

Durham. Judging from the reported localities, B. compressus attains an elevation in the north of England, that will warrant its reference to the superagrarian zone by altitude, although perhaps it may not reach that zone by latitude.

1183. BLYSMUS RUFUS, *Link.*

Area * * * * * * 7 * 9 * 11 12 13 14 15 16 17 18.
South limit in Anglesea, Caernarvon, Durham.
North limit in Shetland, Orkney, Hebrides,
Estimate of provinces 10. Estimate of counties 30.
Latitude 53—61. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in North Wales.
Ascends, at the sea level, to the North Isles.
Range of mean annual temperature 49—45.

Native. Littoral. The localities on the shores of Anglesea and Caernarvon may be considered to bring this species slightly within the inferagrarian zone, although it does not descend to that zone on the eastern side of England. Its distribution will afford a good illustration of the Scottish or boreal type of distribution, by a series of localities, commencing with Durham, and including nearly all (if not all) the maritime counties of Scotland, and passing downward again to Lancashire, on the west side of England, with outlying stations in North Wales.

1184. SCIRPUS LACUSTRIS, *Linn.*

Area general.
South limit in Cornwall, Dorset, Sussex, Kent.

North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Paludal, Lacustral. Some of the localities on record for this species, in all probability belong to S. glaucus; but there seems no reason to doubt its provincial generality; nor to suppose much less than a comital generality also. Dr. Bromfield remarks that he has not found this species in the Isle of Wight, "which possesses only the next species or variety," S. glaucus of Smith. It will be observed that neither the Isle of Wight nor the county of Hants are mentioned above, in tracing the southern limit of the species in England. In giving the southern limits of English plants by counties, my usual rule has been to take "Cornwall, Isle of Wight, Kent," as being the three most southern counties, — west, midland, and east, respectively, — by naming which a sort of line would be traced across the South of England. But when a southern species was unknown in the Isle of Wight, I preferred to substitute "Dorset, Sussex," rather than "Hants," for showing the southern limit. An obvious reason for this preference will meet the eye of any geographer who looks on a map of England; namely, that Hants extends considerably farther northward than the other two counties; and that the two latter are thus better adapted for indicating a *southern* line. I mention this reason here, because Dr. Bromfield wrote to ask why mainland Hampshire was not given (failing the Isle of Wight) in indicating the southern lines of plants; and other botanists might also suppose that the omission of

Hants, under the circumstances, was intended to convey an intimation that the species remained unknown in the whole county, not simply in the Isle of Wight. On similar grounds, when I find no authority for a species in Cornwall or Kent, I usually name Devon or Sussex as the next most south-western or most south-eastern counties; because Pembroke and Essex, more westerly and easterly, would be much less adapted for showing the southern extension of the species in this country. Though not a floating plant, like most of the Lacustrals, it grows so constantly in water as to class better with the lacustral than with the paludal plants.

1184, b. SCIRPUS GLAUCUS, *Sm.*
("S. Tabernæmontani, *Gm.*")

Area 1 2 3 4 [5] 6 7 8 * * * * 13 14 15 16 * [18].
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Forfar, Dumbarton, Argyle (Islay).
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the coast level, to E. and W. Highlands.
Range of mean annual temperature 52—47.

Native. Littoral, Paludal. As intimated under S. lacustris, the frequency of this species, if species it be, is probably understated, in consequence of its being passed by without particular notice, as if merely typical S. glaucus. It may grow so far north as Orkney; but my sole authority for that habitat is the manuscript Flora by Dr. Gillies, not revised for publication. Fries writes of this plant, "at Scirpus lacustris et glaucus, e solo salino na-

tus, nunquam promiscui, per multos gradus intermedios in se invicem transeunt." The late Dr. Bromfield also seemed much to doubt their permanent diversity.

1184*. Scirpus carinatus, *Sm.*

Area * 2 3 * [5 * * 8 * * 11].
South limit in Sussex, South-east Kent.
North limit in Surrey or Middlesex.
Estimate of provinces 2. Estimate of counties 4.
Latitude 50—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends, at the coast level, to Thames.
Range of mean annual temperature 51—49.

Native. Paludal or Lacustral. Very local; found in the river Arun, in Sussex, and in the Thames, between Middlesex and Surrey. According to the Rev. G. E. Smith, it occurs also in dykes at Lydd, Ham Ponds, and Sandwich; and also in ponds at Eastwear Bay (Cat. South Kent); but the Authors of the 'British Flora' and 'Manual' ignore these latter stations,—on what ground I know not. "Chickhill Pool, near Enville, and at Himley," are two Staffordshire localities on record ("Scott's Stourbridge") on very bad authority; and they probably intended S. sylvaticus, which I have seen at Himley, and have had it brought to me under the name of "carinatus," from the banks of the Thames. "Ashby canal, in the neighbourhood of Twycross" (Rev. A. Bloxam, in Phytol. ii. 642) is the authority for the province of Trent; but some error may here also be presumed, especially as the species is not admitted into Miss Kirby's Flora of Leicestershire. There yet remains another very doubtful

locality to be mentioned; namely, "by the Tees near Stockton, Durham. — G. T. Fox, Esq." (Flora N. D.), which may also be rejected until confirmed by a better known botanist. Such are the reasons for enumerating, and at the same time excluding, provinces 5, 8, 11, in the line of 'Area' above.

1185. SCIRPUS HOLOSCHŒNUS, *Linn.*

Area 1 [2 * * 5 * * * * * * 12].
South limit in — ? [Dorset ? Hants ?]
North limit in North Devon, Somerset.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends: — Ascends: — At or about the sea level.
Range of mean annual temperature 50.

Native. Littoral. Extremely local; and perhaps restricted to the two neighbouring localities of Braunton Burrows, North Devon, and Watchet, Somerset. The counties of Dorset, Hants, Worcester, and Cumberland, have also been recorded for this plant; but there is no recent authority for any of them, and the two latter were doubtless errors; whether the two former were so likewise, may be less certain.

1186. SCIRPUS SETACEUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80.

Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Paludal. Being unprepared to quote any authority for this species in Huntingdon, Northampton, Pembroke, Lincoln, Isle of Man, or Shetland, — counties in which the commoner plants are now known with some approximation to completeness, — I have thought that it may possibly be absent from some whole counties; and have accordingly reduced the estimate to 80, without venturing to put it so low as 75, the next descending step in the series of numbers used.

1187. Scirpus Savii, *Seb. et Maur.*

Area 1 2 * * * 6 7 * * * * 12 13 * * 16.
South limit in Cornwall, Devon, Dorset, Wight.
North limit in Argyle (Islay, Cantire), Ayrshire.
Estimate of provinces 8. Estimate of counties 25.
Latitude 50—56. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to ——? Little above the coast or sea level?
Range of mean annual temperature 52—48.

Native. Paludal, Sublittoral. Comparatively a recent discovery, — or, rather, discrimination; and consequently its localities imperfectly ascertained; these having been disregarded, or gone to increase unduly those of S. setaceus. In addition to the counties mentioned above, those of Somerset, mainland Hants, Glamorgan, Caermarthen, Pembroke, Merioneth, Caernarvon, Anglesea, Isle of Man,

and Wigton are to be added, and very probably others between some of these. It will be seen that the county estimate above is taken much higher than actual records at present show; allowance being made for the recent discrimination, and the inconspicuous size of the plant.

1188. SCIRPUS TRIQUETER, *Linn.*

Area * 2 3 [4 * * * 8].
South limit in Sussex.
North limit in Surrey and Middlesex.
Estimate of provinces 2. Estimate of counties 3.
Latitude 50—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends : — Ascends : — At the coast level only.
Range of mean annual temperature 51—49.

Native. Paludal, or Lacustral. Found only on the banks of the Arun, in Sussex, and of the Thames, where running between Surrey and Middlesex. Also, on the sides of Acle Dam, in Norfolk, according to Mr. Crowe; where, however, Mr. Dawson Turner and other botanists looked for it in vain. And in a "pond in Market Bosworth Park, according to the Rev. N. P. Small," in the Flora of Leicestershire; but this alleged station must also be rejected, unless confirmed on higher botanical authority. Local Floras are very usually (although not quite invariably) the undertakings of young botanists, or of those whose scope of scientific research is restricted to a narrow range. Hence, it would appear, comes their readiness to swell the number of species in their lists, by admitting improbable plants, on indifferent authority, and without due inquiry. Too slenderly acquainted with the use and application of facts in science, they imagine that

the number of species enumerated, and not the accuracy of the facts, constitutes the value of a local Flora. Strange delusion! And yet a very prevalent delusion! Professor Forbes aptly described the practice as something supposed to be achieved "for the honour of the district."

1189. SCIRPUS PUNGENS, *Vahl.*

Sarnian. St. Ouen's Pond, Jersey. - Long considered a variety of S. triqueter, which it much resembles in general aspect, while it may be truly distinct.

1190. SCIRPUS MARITIMUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to North Highlands.
Range of mean annual temperature 52—47.

Native. Littoral, Paludal. Extends farther inland than several other of the maritime plants; especially up the valley of the Severn, into Worcestershire (Rufford, in Midland Flora), and even into Staffordshire, in a salt marsh near Kingston (Garner, N. H. S.). I have seen it in a brick-maker's yard, at Standground, Huntingdonshire, so much above the level of the Nene river, as to preclude the explanation of its getting there by any flood-rise of the river; but I supposed the roots or seeds acci-

dentally introduced through human agency into a place of that kind. Found in Faroe, according to Sir W. C. Trevelyan.

1191. SCIRPUS SYLVATICUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Banff, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. Its early northern limit, and its comparative scarcity in Scotland, place it intermediate between the English and British types of distribution; though perhaps nearer to the latter, than to the former. Even in England, where it makes an approximation to comital generality, it still cannot be deemed a common plant; and it was actually included among the "plantæ rariores" in Turner and Dillwyn's 'Botanist's Guide'; but was not retained in the New Guide.

1192. SCIRPUS PALUSTRIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Paludal. Possibly this may occur in every county, although existing records certify it in scarcely more than 60. Its omission from some of the local catalogues, for spaces of several miles in diameter, together with the probability that S. uniglumis and S. multicaulis are occasionally recorded under name of S. palustris, has induced me to put the comital estimate rather below the highest number. I have a specimen much resembling S. palustris in other respects, but scarcely three inches high, and with the nuts either reticulated or covered over closely with impressed dots, rather less in size than the nuts of S. palustris, and crowned with a broader and shorter persistent base of the style. This was sent to me several years ago, from the Mull of Cantyre, by Prof. Balfour, labelled "multicaulis?" Perhaps the same thing, with the nuts immature, has been received from the Rev. G. Gordon, as S. pauciflora, from Culben Sands, Moray.

1192*. SCIRPUS UNIGLUMIS, *Link.*

Area * 2 * * * * * * * * * * * * 14 15 16 * 18.
South limit in Dorset, Sussex, ——?
North limit in Orkney, Hebrides.
Estimate of provinces —? Estimate of counties —?
Latitude 50—61. (Britlish?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel province.
Ascends to ——— ?
Range of mean annual temperature 50—46.

Native. Paludal? Only of late separated from S. palustris by the botanists of this country; nor have I myself yet learned how to distinguish the two alleged species. Fries declares them distinct, and of course Mr. C. C. Babington adopts the like opinion. Dr. Bromfield anticipated their early reunion. Having been found almost at the two extremities of Britain, the ranges of latitude and climate are wide, and many intermediate stations may be expected. Besides the counties above mentioned, Mr. Syme found it in Linlithgow, Kincardine, and Argyle; and Dr. Dickie is said to have found it in Aberdeen.

1193. SCIRPUS MULTICAULIS, *Sm.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13 14 15 * 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.
Native. Paludal, Ericetal. Recorded from about 35 counties; but doubtless often passed over in former years, as if S. palustris; its localities thus escaping record.

1194. SCIRPUS PAUCIFLORUS, *Lightf.*

Area 1 2 3 4 5 6 7 * 9 10 11 12 13 14 15 16 17 [18].
South limit in Cornwall, Isle of Wight, Kent?
North limit in Ross, Aberdeen, Argyle.

Estimate of provinces 16. Estimate of counties 50.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Ericetal, Uliginal. Some uncertainty attends the provincial area indicated for this species. Dr. Neill mentioned it in his Tour in Orkney, as seen plentifully on Hoy hills; but Mr. Syme supposes that Neill mistook S. multicaulis for the present species; and I think there is no other published authority for the North Isles. Among the Orkney plants, believed to have been collected by Dr. Gillies, is a specimen of S. cæspitosus, labelled S. pauciflorus. I have myself not seen any English specimen of S. pauciflorus from localities southward of Norfolk and Cheshire; and yet there are a dozen good or admissible authorities for its occurrence in many counties of the six most southerly provinces. Probaby it rises into the arctic region; for I think it was seen above 2000 feet of elevation in Cumberland.

1195. SCIRPUS PARVULUS, *R. & S.*

Area [* 2].

Extinct? Said to have been found on a mud flat near Lymington, where it has since been sought unsuccessfully. See the remarks of Dr. Bromfield, in Phytologist, iii. 1028.

1196. SCIRPUS CÆSPITOSUS, *Linn.*

Area general.
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in Peninsula or Channel.
Ascends to 1150 yards, in East Highlands.
Range of mean annual temperature 50—35.
Native. Ericetal. Perhaps absent from some few of the more southerly counties of England, as Oxford and Hertford. Very abundant in the arctic region. Cornwall requires confirmation as a habitat for this species.

1197. SCIRPUS ACICULARIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * [18].
South limit in Cornwall, Dorset, Sussex.
North limit in Forfar, Perth, Renfrew.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in Scotland.
Range of mean annual temperature 51—47.
Native. Paludal, Inundatal. In most English counties, probably; but in few of the Scottish counties. Mr. Syme has seen a specimen from Clackmannan, which thus con-

firms it to Scotland, where its existence rested upon old and not the best authorities. Enumerated among the plants of Forfarshire, by George Don; but not included in the Flora of that county, by Mr. Gardiner. In the manuscript Flora of Orkney, Dr. Gillies only cites the list in Barry's History, without confirming the habitat by his own or any other additional authority. Not yet ascertained in 50 counties; but doubtless often overlooked.

1198. SCIRPUS FLUITANS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Lacustral, Paludal. Less common than most other plants with an equally wide area. Ascertained in 16 provinces, and fully 40 counties. The two provinces, for which I find no record of this species, cannot be considered unlikely habitats; and one of them is accordingly reckoned in the provincial estimate, But as the species is omitted from various local lists and floras, the comital estimate is taken proportionally lower.

ERIOPHORUM ALPINUM, *Linn.*

Area [7 * 15 * 17].

Incognit? Discovered in the Moss of Restennet, about three miles eastward of Forfar, in the year 1791, by Mr. George Don and Mr. (Robert?) Brown; but subsequently lost there by drainage. Three other county habitats have also been given, but under circumstances that prevent reliance upon them, while unverified. In Denbighshire, according to the Faunula Grustensis. On the mountains of Breadalbane, in Perthshire, according to Mr. Somerville, in Flora Scotica, &c. And said to have been picked by Dr. Balfour, in Durness, Sutherland, so long ago as August, 1827, according to a Report of the Botanical Society of Edinburgh, in Bot. Gaz. ii. 52. The county is likely enough, it must be admitted; but after a lapse of more than twenty years, it is safer to suppose some inadvertent mingling of specimens, than to rely upon the unconfirmed and most vague evidence adduced. It is said that Dr. Balfour, then a student, mistook the plant for Scirpus cæspitosus. But did Professor Graham, in whose company he went to Sutherland, also mistake the plant? And did Professor Balfour continue to make this mistake till the year 1850, after having doubtless seen and possessed foreign or garden specimens of Eriophorum alpinum?

ERIOPHORUM CAPITATUM, *Linn.*

Area [15].

Incognit. Stated to have been found by George Don "on a sand bank, by an alpine rivulet on Ben Lawers, Scotland, near the limits of perpetual snow." But there is no "perpetual" snow on Ben Lawers. And even supposing the words to be simply a loose mode of expressing a patch of late-lying snow, I have seen what would justify this latter reading only in a hollow near the summit, where there is no rivulet, and cannot be one from the fissured and broken character of the rocks. It must be remembered, however, that George Don was very inexact in describing localities; and that a bad description of a station will not necessarily imply intentional falsehood. There is said to be a specimen from Don in the herbarium of Sir W. J. Hooker, which "resembles E. capitatum, but the upper part of its stem is triangular" (Bab. Man. 3, p. 352). This is unsatisfactory. Is the specimen one of E. capitatum, or not? By the triangular stem, it should rather be E. vaginatum. And yet, by the British Flora, it would seem that Don's specimens were those of E. capitatum, suggested to be of foreign origin.

1199. ERIOPHORUM VAGINATUM, *Linn.*

Area general.

South limit in Cornwall, South Hants, Sussex.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 70.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in North Peninsula.

Ascends to 1000 yards, in East Highlands.

Range of mean annual temperature 50—37.

Native. Ericetal. A scarce plant in the four first provinces; increasing in frequency northwards and westwards; and becoming common on the Highland moors and mountains. Perhaps the actual number of counties in which it grows may be below 70, but above 60. While in flower or fruit this is a sufficiently conspicuous plant, to render its upper limits less likely to be overlooked, than in the case of more obscure plants. Accordingly, I find considerable uniformity in the altitudes noted for it on different mountains, in the great Grampian range of the East Highlands; making some allowance for difference of aspect, and other local causes of variation. The usual limit is at 850 or 900 yards.

1200. ERIOPHORUM ANGUSTIFOLIUM, *Roth.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Superarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 1150 yards, in East Highlands.

Range of mean annual temperature 51—35.

Native. Uliginal, Ericetal. There are 13 counties only in which I am now unable to cite authorities for the occurrence of this species; and there is scarce a doubt

that it will be found in 12 of those counties, if that of Huntingdon, the 13th, should be a real exception. In ages past, before drainage and cultivation had banished the heath and bog plants from so much of England, this would doubtless be one of the commonest native plants of Britain; however little such may now appear to be the case in the eyes of the metropolitan botanist. Under this species I reckon the localities of "E. polystachyon" and "E. angustifolium" of British botanists; though possibly some few of the stations recorded for the former, may belong to E. latifolium.

1201. ERIOPHORUM LATIFOLIUM, *Hoppe.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Devon? Isle of Wight, Kent.
North limit in Sutherland, ——— ?
Estimate of provinces 17. Estimate of counties 60.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in England.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—46.

Native. Uliginal, Ericetal. Sparingly scattered through Britain, and quite rare in the first six or seven provinces, according to existent records. But the localities at present on record are probably much below the actual census of the species, which has doubtless been frequently confused with E. angustifolium. In stating the provincial area above I have been obliged to assume this species intended in one case, where another name has been used; that is, in Flora Devoniensis, where the E. polystachion, of Dartmoor, is described with "flat" leaves, and would

thus appear to be E. latifolium. For the other 15 provinces mentioned, there is good or admissible authority, either in print, or given to me in shape of manuscript notes. Remarkably enough, I have never seen the species alive. The specimens in my herbarium are from Hereford (Mr. Lees, B.S.L.), York (Mr. James Ward), Durham (Mr. R. B. Bowman), Northumberland (Sir W. C. Trevelyan), Dumfries (Mr. Cruickshank), Ross (Rev. George Gordon), Sutherland (Professor Graham).

1202. ERIOPHORUM GRACILE, *Koch.*

Area * [2] 3 * * * [7] * * 10 * * * * [15].
South limit in Surrey.
North limit in Yorkshire ?
Estimate of provinces 2. Estimate of counties 2.
Latitude 51—55. Local (Eng.) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends nearly to the coast level. (50 yards ?)
Ascends to 100 yards, more or less, in Yorkshire ?
Range of mean annual temperature 49—47.

Native. Uliginal. Only one station for this species is known certainly; namely, at Whitemoor Pond, in Surrey; where drainage is likely soon to destroy the plant. The second station is probable; Mr. Woods having found an Eriophorum supposed to be this species, near Halnaby, in Yorkshire, in "a small strip of boggy ground, mostly covered with brushwood, on the left hand of the road from Croft, which affords Ranunculus Lingua," &c. (Comp. Bot. Mag. i. p. 290). In the Manual of British Botany, E. gracile is said to grow at "Hagnaby, Yorkshire;" but as Hagnaby is in Lincolnshire, the same locality with that of Mr. Woods is probably intended. The other alleged

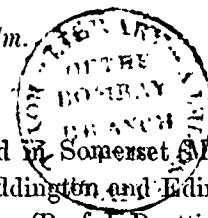
stations are now allowed to be errors, although some of them were recorded on high authority; namely, those in Sussex, Worcester, Caernarvon, Perth and Forfar. I do not know the altitude of either of the true and probable stations.

1203. ELYNA CARICINA, *M. & K.*

Area [1] * * * * * * * * 10 11 [12] * * 15.
South limit in York, Durham. [Devon?]
North limit in Perth. [Westmoreland?]
Estimate of provinces 3. Estimate of counties 3.
Latitude 54—57. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 600 yards, less or more, in Tyne.
Ascends to 800 yards, more or less, in E. Highlands.
Range of mean annual temperature 41—37.

Native. Ericetal? Extremely local; being certainly known only in a few adjacent stations on Teesdale forest, in Yorkshire and Durham, and near one of the summits of the Breadalbane mountains, in Perthshire. Possibly another station in the county of Perth, Ben More, may be added, as intimated in the New Botanist's Guide, vol. ii. p. 473. The localities of Broad Clyst Heath and Haldon; in Devon (Mr. Jacob), and that of Birkdale, in Westmoreland (Rev. J. Harriman), are rejected until verified afresh by some second botanist. As I am not aware of the altitudes of the stations, they are indicated only by an approximate guess; and the same remark may apply to the zones of climate, as well as to the kind of situation in which the plant grows.

CAREX DAVALLIANA, *Sm.*



Area [* 2 * 10 * 14 15].

Incognit. Said to have been found in Somerset (Mr. E. Forster), York (Mr. Teesdale), Haddington and Edinburgh (Mr. R. Maughan), and Kincardine (Prof. J. Beattie). Possibly it was once found at Lansdown, near Bath, and afterwards "lost by drainage." The other alleged localities were probably all erroneous, if not that near Bath also, which is not quite satisfactory. Then why enumerate them, and use type and paper to repeat again the useless errors of other botanists? None of the authorities above cited now remain among the living, to take umbrage at the remarks that I am here about to subjoin, with a view to meet and answer the objecting question, not asked now for the first time.

Some botanists not much addicted to the reasoning departments of science, have appeared unable to understand, why it is that the Author of the Cybele Britannica should enumerate the errors put on record by other botanists, and should dwell more especially upon those records, the accuracy or inaccuracy of which must be still left in some degree of doubt. It is requisite for the writer of such a work as the present, to know all the localities reported for each species, as far as possible, and then to consider the credit-worthiness of each of these localities, before he can be sufficiently prepared to lay down their distribution by a fixed formula, of the comprehensive character of the one adopted for this work. If he should see reason to reject, or only to distrust, any reported localities for a species, the formula would likely be drawn out differently for that species, and more restrictedly than printed

records would seem to require. This being the case, if he should then simply pass unnoticed the rejected and distrusted localities, it might readily appear to his readers, or to succeeding writers on the same subject, that he had overlooked them, and that he had in consequence described the distribution of the plant incorrectly. He certainly has no wish to *find errors*, though it be needful for him to *find out what are errors*, where they do exist; also to account, in some measure at least, for his doubt or denial of the false facts,—if such an illogical expression may be penned. Indeed, the ten per cent. of false and doubtful records, by their tendency to mislead and confuse, have caused the Author of the Cybele Britannica more trouble and inconvenience than all the other ninety per cent. of facts which appear sufficiently probable and credit-worthy, to pass the critical ordeal. And perhaps the great additional trouble thus unnecessarily forced on him, may have often led him to allude with more asperity than courtesy, to the individual botanists whose carelessness or conceit has so loaded our botanical literature with records that are false or deceptive,—whether false localities,—or false names,—or false species, recorded as true and real. This work is a sort of pioneer in its department, advancing before successors, not simply following predecessors; and pioneers have usually to remove many obstacles and clear much rubbish from their way.

1204. CAREX DIOICA, *Linn.*

Area [1] 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Cornwall? Dorset? Sussex.
North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 17. Estimate of counties 50.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Channel.
Ascends to 950 or 1000 yards, in East Highlands.
Range of mean annual temperature 50—37.

Native. Ericetal, Uliginal. Frequent on the northern moors and mountains, but scarce in the 4 or 5 most southerly provinces of England. Whether it really occurs at all in the Peninsula, is highly doubtful; but there is Mr. Borrer's authority for one habitat in the Channel province; namely, the county of Sussex. The other 16 provinces are sufficiently supported by botanical authorities.

1205. CAREX PULICARIS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Uliginal, Ericetal. Perhaps the county estimate may be slightly too high, although there seems about equal chance that it may be as much too low. Localities are known in nearly 60 counties; and all the rest seem likely enough to produce this species, judging by their geographical position, and character of surface;

unless those of Berks, Bucks, Hunts, and Northampton, or some of them, may be exceptions to a comital generality.

1206. CAREX PAUCIFLORA, *Lightf.*

Area * * * * [5] * * * * 10 11 * 13 * 15 16 17.
South limit in N.E. York, Dumfries (W. Stevens).
North limit in Sutherland.
Estimate of provinces 6. Estimate of counties 16.
Latitude 54—59. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 250 yards, or lower, in East Highlands.
Ascends to 850 yards, in same province.
Range of mean annual temperature 45—39.

Native. Uliginal, Ericetal. Rather frequent on the Highland mountains, between 500 and 700 yards of altitude; very local elsewhere. There is something exceptional and note-worthy in the more southerly habitats of this species. It is an inferalpine or subalpine plant, reappearing in the Lowlands and north-eastern provinces of England, without passing to the Cumbrian or Cambrian mountains, as would seem by our records. Cornus suecica afforded a similar instance. Possibly the lowest altitude, in proportion to latitude and distance from mountains, may be the habitat in the north-east of Yorkshire, between Pickering and Whitby, which appears to have been visited hitherto only by mere collectors of specimens; and therefore we have no better information about it, than the simple record that C. pauciflora grows somewhere, at some elevation, in some sort of situation, left to the imagination. But Whitby being on the coast, Pickering probably of trifling elevation, and the neigh-

bouring hills or moors attaining to between 400 and 500 yards of altitude above the sea,—given the fact, that C. pauciflora occurs somewhere between these different heights, at what height does it occur?—Of course, it is impossible to answer the question on these data, at a distance from the place. As another aid towards determining the lower line of the species, we have had the following lucid information placed on record, as something worth printing, by a Professor of Botany, in the year 1843;—"Carex pauciflora was also seen in marshy ground near Strathblane, at a much lower level than usual." In the year 1843, did Professor Balfour, or any other botanist, know the *usual level* of C. pauciflora, its level varying by at least 600 yards of perpendicular altitude? And if not, what is the wit of comparing two different altitudes, neither of them being known, or expressed in words even approximately? Blank is much lower than blank! Such loose unmeaning records are almost valueless in science; and I take opportunities of directing attention to their vague inutility, not for the sake of sarcasm or censure as an end, but as penetrating means for inciting botanical observers to improvement in future notices intended for publication.

1207. CAREX RUPESTRIS, *All.*

Area * * * * * * * * * * * * * * 15 * 17.
South limit in Perth, Forfar, Aberdeen.
North limit in Sutherland.
Estimate of provinces 2. Estimate of counties 4.
Latitude 56—58. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 700 yards, in East Highlands.

Ascends to 850 or 900 yards, in same province.

Range of mean annual temperature 40—38.

Native. Rupestral, Ericetal. Long overlooked by the botanists of Scotland, or not unlikely passed as a starveling state of C. pulicaris. Since its first discovery by Professor Dickie, in or about the year 1836, it has been found in several stations; some of the places previously familiar enough to botanical tourists; which gives rise to an expectation that it may still be discovered in other new localities. All the stations are included in the four counties named above, so far as they are known to me. Not improbably the plant should be referred to all three arctic zones, and to lower and higher altitudes than above indicated. By the Rev. Churchill Babington, it was found "on low rocks by the road side, going from the Inn at Inchnadamff, northwards, on the right hand, growing with Carex capillaris." Dr. Dickie writes,—"Glen Callater, not lower than 2000 feet, plentiful at 2397, but I was unable to measure its highest point. Last summer Prof. Balfour gathered it along with Luzula arcuata and Astragalus alpinus, on the Ben Avon range, the altitude is not, however, recorded. This will be a lower limit for the L. arcuata in this part of the country, than has hitherto been found, since the Ben Avon range does not exceed 3920 feet." (London Journal of Botany, ii. 358.) Is this correct? Do Luzula arcuata and Astragalus alpinus grow together in any of their stations? If so, the indications of altitude for one or the other, as before given in this work, will require revision.

1208. CAREX INCURVA, *Lightf.*

Area * * * * * * * * * * * * * [14] 15 * 17 18.
South limit in Fife? Forfar, Kincardine.
North limit in Shetland, Hebrides? Sutherland.
Estimate of provinces 4. Estimate of counties 9.
Latitude 56—61. Scottish type of distribution.
Agrarian region. Superagrarian zone.
Descends to the sea level, in East Highlands.
Ascends, at the sea level, to North Highlands.
Range of mean annual temperature 48—45.

Native. Littoral. Among eleven counties recorded for this distinct-looking Carex, two are very probably erroneous, and two others may be said to require verification. Mr. Thomas Edmondston (Phytol. i. 105) recorded it as found on the shores of Edinburgh and Linlithgow, although it appears never to have been seen there by any of the scores of botanical collectors who have herborized on those shores. Mr. Maughan (Hook. Scot.) reported it from the Links of St. Andrews, Fifeshire; a locality not unlikely. And Mr. Babington (Manual) wrote, "A single specimen, gathered on the sands at Scaristra, in the isle of Harris, belongs either to this species or to C. stenophylla (Willd.)" But in the second and third editions of the same truly useful work, no mention is made of this doubtful plant and station; so that we are left in the dark, whether C. incurva has or has not been found in Harris. It is one of the small defects of Mr. Babington's writings, to omit the correction of his past errors, by dropping them unnoticed. A printed record, however, remains a record, whether true or erroneous; and it can be confirmed or repudiated only by a second record.

1209. CAREX STELLULATA, *Good.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, in East Highlands.
Range of mean annual temperature 52—37.

Native. Paludal. It is seldom that I venture to estimate a comital generality for any plant not enumerated in the Flora of Shetland. But a species so very frequent as this is in Britain, found in Orkney and Faroe, and distributed over all Scandinavia, would appear very likely to occur in Shetland; and its omission from a Shetland Flora, penned by quite a young botanist, without local assistants in botanical research, will scarcely be held to negative the probability in favour of its occurrence somewhere in that group of isles.

CAREX BRIZOIDES.

Area [10].

Incognit? "Studley Wood, Yorkshire. *Mr. W. Mac Ivor;*"—Bab. Man. edit. 3. This is the only information that I possess about C. brizoides being found in Britain. And having seen no British specimen, and knowing nothing whatever about the botanical fidelity of Mr. W. Mac Ivor, I prefer not to hold the plant as an established

native at present. Studley Woods have not seldom been visited by botanists; and it is a little remarkable that the plant should have previously remained quite overlooked by all of them.

1210. CAREX LEPORINA, *Linn.*

Area * * * * * * * * * * * * * * * 15.
South limit in Aberdeen.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—58. British type of distribution.
Arctic region. Superarctic zone.
Descends to 1200 yards, or lower.
Ascends to 1200 yards, or higher.
Range of mean annual temperature, say 34.

Native. Rupestral. Dr. Dickie discovered this plant "on Loch-na-gar, at 3559 feet, more or less." It has been since found, apparently at about the same altitude, in a few stations on or about Cairn-toul, in the same county of Aberdeen. The two hills being south and north of the latitudinal line of 57, the range of latitude for this local species is made to appear wide, by giving the two next parallels, southward and northward, from the one which intersects the stations.

1211. CAREX OVALIS, *Good.*
CAREX ARGYROGLOCHIN, *Hornem.* ?

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Sutherland.

Estimate of provinces 18. Estimate of counties 81.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Paludal, Pratal. I have no authority for this species in Orkney; where it is not unlikely to be found. The C. argyroglochin is doubtful as a British plant; or, at any rate, the plant intended by that name in the London Catalogue, is a variety of C. ovalis, kindly sent to me from the Severn province, by Mr. Westcombe.

1212. CAREX CURTA, *Good.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 50.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 750 yards, more or less, in East Highlands.
Range of mean annual temperature 51—39.

Native. Paludal. The recent separation of C. Persoonii or vitilis from this species, by British botanists, renders it difficult for me to indicate their relations to altitude. In my visits to the mountains, I have entered their stations under the single name of "curta," in my note-books, and cannot now satisfactorily assign them to the dissevered species. The above indications may possibly carry the modern C. curta too high, or leave it too

low. If so, the correction must be left to future observers, or to future opportunities.

1212, b. CAREX PERSOONII, *Schreb.*

Area * * * * * * 7 * * 10 11 * * * 15 * 17.
South limit in Merioneth, Caernarvon, York, Durham.
North limit in Ross, Aberdeen, Perth, Forfar.
Estimate of provinces 7. Estimate of counties 15.
Latitude 52—58. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 350 yards, in Humber (J. G. Baker).
Ascends to 1000 yards, in East Highlands.
Range of mean annual temperature 42—36.

Native. Uliginal, Paludal. The stations are very imperfectly recorded at present, on account of the combination of this alleged species with ordinary C. curta of the lower zones. All the counties certainly known to me for C. Persoonii, are mentioned above in indicating the southern and northern limits. I think, however, that I must have seen it in the West Highlands, and in other counties than those above mentioned, in the North and East Highlands. Mr. F. J. A. Hort names for C. Persoonii the counties of Merioneth, Caernarvon, and Durham. Mr. J. G. Baker records that of York. For Perth, Forfar, Aberdeen, there are various authorities, and I have myself seen the plant in those counties. Mr. C. C. Babington informs me that it grows on Ben Wevis, in Ross-shire.

1213. CAREX ELONGATA, *Linn.*

Area * * 3 * 5 * * * 9 10.
South limit in Surrey, Essex, Salop.
North limit in York, Lancaster, Chester.
Estimate of provinces 4. Estimate of counties 6.
Latitude 51—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames province.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 49—47.

Native. Paludal. A local plant, with its few localities widely scattered. It has been long known in Shropshire and Yorkshire. Dr. J. B. Wood and others find it in Cheshire and Lancashire. My herbarium is indebted to Mr. Varenne and Mr. Bentall, for specimens from Essex. And I have gathered it in one spot in Surrey, that is, in a field close by the river and canal bridge at Weybridge, where drainage may shortly destroy it. These are the only six counties in which I am aware of localities for C. elongata, a plant which seems not unlikely to be found also in some of the intermediate counties.

1214. CAREX REMOTA, *Linn.*
1214, b. CAREX TENELLA, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 [17].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Banff, Argyle. [Ross ?]
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Inundatal, &c. Frequent in England; less so in Scotland. I know of one authority only for it in the North Highland province; namely, a label from the Botanical Society of Edinburgh, accompanying a true specimen, with this account of it:—"Ross-shire. Comm. Stables. 1836." As this habitat would make the difference of another province, and one beyond those in which the species is otherwise known, I fear to rely upon it; having seen too many instances of wide inaccuracy in indicating localities and counties, on the labels of that Society. But as C. remota does occur in the adjacent county of Moray or East Inverness, it may likely extend also into that of Ross. Of "C. tenella" I know nothing; nor does it appear that the Authors of our descriptive Floras of Britain are better acquainted with Smith's or Don's supposed species, said to have been found in Forfarshire.

1215. CAREX AXILLARIS, *Good.*

Area 1 2 3 4 5 * * 8 9 10 * * * [14 15].
South limit in Devon, Isle of Wight, Kent.
North limit in York, Lancaster.
Estimate of provinces 8. Estimate of counties 15.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 150 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Paludal, &c. The localities of this species

and C. Boenninghauseniana were not distinguished apart by British botanists, prior to 1842; and even in subsequent years, some confusion or commingling appears to have still taken place. The localities in Edinburgh, Perth, and Moray, are now referred to the other species; and very likely some others of those on record for C. axillaris ought to be equally transferred. The specimens in my herbarium, referred to the present species by the donors or myself, are from Somerset (Dr. R. C. Alexander), Sussex (Mr. Borrer), Essex (Mr. E. G. Varenne), Suffolk (Mr. D. Stock, B. S. L.), Norfolk (Mr. G. Fitt, B. S. L.), Chester (Mr. J. Sidebotham, B. S. L.). In thus assigning the specimens to the species, I am guided principally by the secondary spiculæ being "alternate" or "crowded" at the base of the primary spiculæ. C. axillaris has the primary spiculæ occasionally quite simple, and it is then so like C. remota as almost to have become the latter species.

1216. CAREX BOENNINGHAUSENIANA, *Weihe.*

Area * 2 3 * * * * * [9] * * * * 14 15.
South limit in Isle of Wight, Sussex, Surrey, Herts.
North limit in Moray, Banff, Perth, Edinburgh.
Estimate of provinces 4. Estimate of counties 8.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Midagrarian—Inferagrarian zones.
Descends to the coast level, in Channel?
Ascends to 150 or 200 yards, in East Highlands.
Range of mean annual temperature 50—47.

Native. Paludal. From the remarks made under C. axillaris, it will have been seen that much uncertainty must also attend the localities and distribution of this species. The eight counties mentioned above, I suppose

to be correct; but have seen the plant myself in Surrey only. There is one other on record, which I must distrust at present. In the Supplement to English Botany, 2910, we are told by the Rev. W. H. Coleman, that Mr. C. C. Babington possesses specimens gathered at Congleton by Mr. E. C. Wilson. Now, the late Mr. E. C. Wilson, resident in or near Congleton, and Mr. Joseph Sidebotham, of Manchester, appear to have had a botanical intimacy (see Phytol. iii. 70); and the said Mr. Joseph Sidebotham sent specimens of C. axillaris to the Botanical Society of London, gathered "near Congleton," and labelled "Carex Boenninghausiana." I possess a specimen of C. paniculata, gathered in Surrey, curiously like the C. Boenninghauseniana; the panicle being reduced to a spike of distant, sessile spikelets; the lowest about three inches below the one next above it. If I had not taken this specimen from a great tuft producing on other stems the panicled spikes of C. paniculata, I could scarcely have believed it the latter, so much more does it appear like C. Boenninghauseniana.

1217. CAREX INTERMEDIA, *Good.*

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Kincardine, Forfar, Perth, Argyle.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 or 500 yards, in East Highlands.
Range of mean annual temperature 52—43.

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Native. Paludal, &c. No locality for this species having been recorded on the northern side of the Grampians, its known area is hardly so comprehensive as to bring it up to the British type; while it still rather exceeds the English type of distribution, by its many stations in the southern half of Scotland. The altitude above indicated is intended for a station on the Ochill hills, which I had no means of measuring, and of which I could make only a rough estimate, from distant points for comparison.

1218. CAREX ARENARIA, *Linn.*

Area 1 2 3 4 * 6 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral, &c. There appears to be no recorded locality for this plant in the province of Severn; although its occurrence all around the coast line of Britain, including the adjacent counties of Somerset and Glamorgan, would give a reasonable expectation of its existence on the shore of Monmouth, if sought there. Accordingly, the provincial estimate is taken at 18. Not quite restricted to the shores, or even to the coast line; as we are told that it occurs inland, in stations near Petersfield and Sopley, in Hampshire (Phytol. iii. 1037); near Farnham, in Surrey (Bot. Gaz. i. 327); near Mildenhall, in Suffolk (Mr. C. J. F. Bunbury, sp.), &c. Mr. Babington does not

give this as a sea-side Carex at all, merely writing "sandy places," as if it had no particular connexion with the coast, which it most assuredly has.

1219. CAREX DIVISA, *Huds.*

Area 1 2 3 4 * 6 7 8 * 10 * * * [14 15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in S.E. York, N.E. Lincoln, Flint.
Estimate of provinces 8. Estimate of counties 20.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to Humber.
Range of mean annual temperature 52—49.

Native. Littoral, Paludal. As with so many other species of Carex, several false stations would seem to have been recorded for this one. In Hooker's Flora Scotica, on the suspicious testimony of George Don, it is stated to occur on a "marsh near Montrose, and sea-coast of Angus-shire, chiefly in marshy places." This short sentence asserts the existence of three stations at least (a marsh *plus* marshy places), and indirectly implies them to be more numerous. Yet neither Mr. Gardiner nor any other botanist appears to have verified or confirmed any one station in the county of Forfar. But as the kind of situation described, is that in which the Carex divisa does usually grow, the Author of the Flora Scotica might be held quite excused for printing the locality unchallenged, at a time when he himself was slenderly acquainted with the botany of Scotland, and when the accuracy of George Don had not been subjected to those disparaging doubts which it has appeared since so much to warrant. When,

however, we find the late Mr. Thomas Edmondston recording this sea-side Carex, as found by himself on the "Pentland Hills," near Edinburgh (Phytol. i. 405), annually frequented by botanists who had never seen it there or anywhere else in the same neighbourhood (Bot. Soc. Ed. Cat., &c.), the record becomes highly reprehensible, —that is, on account of the uninquiring carelessness of scientific truth which it implied in the botanist, and which will probably throw increased doubt upon other unlikely localities published from the same observer, zealous and acute though he certainly was as a youthful botanist. The locality of Copgrove, in Yorkshire (Winch, Add. N. B. G.), is doubtless also erroneous. The species may have been found formerly at the alleged locality of "Kennington," in Surrey. Mr. Babington restricts C. divisa to "the southern and eastern coasts," and admits it an inhabitant in Scotland (Manual).

1220. CAREX MURICATA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Dumbarton.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pascual, Glareal, &c. If Dr. Stuart correctly reported this species as growing "in Glen Lochy," Perthshire (Lightf. Scot.), it may ascend to 200 yards, and upwards, so far north as the East Highlands, and grow in

a lower temperature by fully two degrees, than is above indicated for it.

1221. CAREX DIVULSA, *Good.*

Area 1 2 3 4 5 * 7 8 * 10 11 * [13 14].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham? York, Denbigh.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Septal, Sylvestral, &c. Marked in the Edinburgh Catalogue, as very rare within 16 miles of that city, which is the authority for province 14 in the line of area; but whether the county of Edinburgh, or even the south side of the Forth, be intended by the record, I am unable to say. According to Mr. David Don (Hook. Scot.) it grows on the rock below Cathcart Castle, in the neighbourhood of Glasgow; but whether this station is rightly referred above [13] to the south side of the river Clyde, I am also not certain. C. divulsa and C. muricata are so difficult to distinguish in some cases, that I prefer to await further confirmation before taking either of these two alleged Scottish habitats into the true area of a species, otherwise limited to England, and not yet ascertained in its most northerly counties. One suspicious locality is recorded in Durham,—suspicious because the same habitat appears to be referred to C. muricata by another authority. (See Winch, Flo. N. D. p. 59).

1222. Carex vulpina, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Moray, Aberdeen.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—46.

Native. Paludal, Inundatal. Frequent in England; perhaps scarce, and chiefly a coast plant, in Scotland. In consequence of their geographical proximity to the West and North Highlands, I was at first much inclined to consider the Outer Hebrides as adjuncts to one of these two provinces, when deciding upon my provincial divisions of Britain. But there being then no Flora of Shetland in existence or prospect, and only incomplete lists of Orkney plants, I thought it advisable to combine the three groups, in order to make some better approximation to a full list of species for the united groups, than it was then at all possible to make for them separately. Increased knowledge has since tended to warrant the natural character of that union even more than was then anticipated; few species were found in the Hebrides, which have not also been found in Orkney or Shetland. Carex vulpina is an exception; this species having been found in one station on the Hebrides by Balfour and Babington, although not known in Orkney or Shetland.

1223. CAREX TERETIUSCULA, *Good.*
1223, b. CAREX EHRHARTIANA, *Hoppe.*

Area 1 2 3 4 5 6 7 8 9 10 * * 13 14 15.
South limit in Devon, Dorset, Sussex, Kent.
North limit in Moray, Aberdeen, Lanark.
Estimate of provinces 14. Estimate of counties 30.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal, Uliginal. Thinly distributed through great part of Britain, with wide intervals of absence, extending even to whole provinces, according to existent records. Perhaps it occurs in more than 30 counties; having been reported from 28 already; but the estimate of 40, the next upward step, seems not warranted by what is at present known of its localities. Carex Ehrhartiana, said to be a variety of C. teretiuscula, has been found near Manchester; also, if I rightly know that variety, it occurred on Wimbledon Common, in Surrey, some few years ago, in a drying up swamp.

1223*. CAREX PARADOXA, *Willd.*

Area * * * * * * * * * 10.
South limit in York.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 53—54. Local type of distribution.

Agrarian region. Midagrarian zone.

Descends: — Ascends: — Little above the coast level.

Range of mean annual temperature about 48.

Native. Uliginal? A somewhat uncertain species, found near York and in Ireland, and so far differing both from C. teretiuscula and from C. paniculata that botanists cannot satisfactorily refer it to either, although in some degree an intermediate plant.

1224. CAREX PANICULATA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17 18.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Orkney, Sutherland? Ross.

Estimate of provinces 18. Estimate of counties 70.

Latitude 50—60. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—46.

Native. Paludal, Uliginal. A specimen is in my herbarium, labelled from Sutherland, but no collector's or contributor's name with it, and I am unable to recollect how it was acquired. On this account, Sutherland is marked inquiringly. As it occurs in Ross (Rev. G. Gordon) and Orkney (Mr. J. T. Syme), the county of Sutherland seems likely also to produce it. Can any botanist report a locality for this Carex in the Lake province? It would seem a very likely species to grow in that province, although I am not aware of any actual record of its occurrence there.

1225. CAREX VAHLII, *Schk.*

Area * * * * * * * * * * * * * * * 15.
South limit in Forfar.
North limit in Aberdeen.
Estimate of provinces 1. Estimate of counties 2.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, less or more.
Ascends to 850 yards, more or less.
Range of mean annual temperature 39—38.
Native. Rupestral. Very local; being known at present in two stations only, and each of very limited extent; namely, in glens on the contrary sides of the mountain ridge which forms the boundary line of Forfar and Aberdeen shires. I do not know the exact altitude, but the above indications are probably near the truth.

1226. CAREX CANESCENS, *Linn.*
(C. Buxbaumii, *Wahl.*)

Hibernian. Hitherto found only in Ireland, and perhaps only in one locality; namely, on an "island near Toom bridge, in Lough Neagh." Likely enough to be found in Scotland.

1227. CAREX ATRATA, *Linn.*

Area * * * * * * 7 * [9] * * * 13 * 15.
South limit in Caernarvon, Dumfries.
North limit in Aberdeen, Perth, Forfar.

Estimate of provinces 3. Estimate of counties 6.
Latitude 53—58. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 850 or 800 yards, in East Highlands.
Ascends to 1200 or 1300 yards, in same province.
Range of mean annual temperature 39—34.

Native. Rupestral. The five counties above named are all those in which the presence of this species is credibly testified. I have gathered it in the three Highland counties; that of Caernarvon is authenticated by Mr. C. C. Babington and other botanists; that of Dumfries rests on the testimony of Mr. William Stevens, who published the station of "rocky cliffs on the top of a hill near Hartfell" (Phytologist iii. 392), a locality sufficiently probable to be admitted, although a verification of the species there would be desirable. Cheshire may be rejected, as depending on no better authority than that of Mr. Bradbury, in the Botanist's Guide. Perhaps the altitudes of some of the stations may be lower than is above indicated; nor is the upper limit at all satisfactorily determined. I have seen C. atrata with a cylindrical terminal spikelet entirely of barren flowers, and two distant fertile spikes underneath; thus making a near approach to C. rigida.

1228. CAREX VULGARIS, *Fries*.
(C. cæspitosa, *Aut. Ang.*)

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferarctic—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 1000 yards, in East Highlands.

Range of mean annual temperature 52—37.

Native. Paludal, Pratal. Long known to British botanists by name of C. cæspitosa, for which that of C. Goodenovii (Gay) was first substituted by Mr. Babington, and then again set aside in favour of C. vulgaris. We have two forms of the plant in Britain; one of them densely cespitose, sometimes producing a score or two of culms in a compact tuft; the other running at the root, and its flower-stems rising more or less separately and singly. Whether these are distinct species, or varieties depending on situation, I am not prepared to say. But I am inclined to think, from various instances observed, that Carices are rendered more stoloniferous when they are more exposed to the bite and tread of cattle, or other similar injuries. Perhaps the tufted form may be the C. turfosa of Fries.

CAREX GIBSONI, *Bab.*

Area [10].

Incognit or Extinct. "Hebden Bridge, Yorkshire; said to be now lost by drainage." (Bab. Man. edit. 2, 3). I fear this has only a name and description in a book, like the Dryas depressa of the same sponsor, without having ever had any real existence as a species in nature. We should hold it a strange fancy in a zoologist, to describe the "Porcupine Family," or "Siamese Twins," or a "Living Skeleton," for distinct species of *Homo;* and yet botanists thus name and describe individual variations in plants.

CAREX CÆSPITOSA, "*Linn.*"

Area ——— ?

Incognit. This name is now restricted to a Carex which appears unknown to the botanists of Britain, although one alleged by Fries to have been received as British from Dr. Greville,—indirectly, I presume, through the Botanical Society of Edinburgh; and if so, of course liable to the suspicion which unfortunately must be attached, on no slender grounds, to labels issued from that Society. Swedish specimens are in my herbarium, labelled as C. cæspitosa; but examples of two species came intermingled with the same label; one, apparently, a state or variety of C. vulgaris; the other, different from any British Carex that I have seen.

1229. CAREX RIGIDA, *Good.*
(C. saxatilis, *Aut. Suec.*)

Area [1] * * * * * 7 * * 10 11 12 13 14 15 16 17 18.
South limit in Caernarvon, Durham.
North limit in Shetland, Hebrides, Sutherland.
Estimate of provinces 10. Estimate of counties 25.
Latitude 53—61. Highland type of distribution.
Agrarian region. Midarctic—Superarctic zones.
Descends to 500 yards, in North Highlands.
Ascends to 1300 yards, in East Highlands.
Range of mean annual temperature 41—34.

Native. Pascual, Rupestral. Whether this Carex occurs strictly within the limits of the East Lowlands, or not so, may be questioned. According to Mr. William Stevens

(Phytologist, iii. 332) it extends over a space of more than half a mile, on the summit of Hartfell; and as it also occurs on the summit of Cheviot (Mr. Winch), we have two stations very near, if neither of them is partially within, the East Lowland province. Perhaps C. rigida should be considered as extending downwards into the inferarctic zone, although but seldom and slightly within it. In Shetland, it may occur as low as 400 yards, unless C. vulgaris has been misnamed C. rigida there. It has been said to occur in the Peninsula, no part of which rises above the agrarian region; but the alleged locality requires verification.

1230. CAREX AQUATILIS, *Wahl.*

Area * * * * * * * * * * * * * * * 15.
South limit in Forfar.
North limit in Aberdeen.
Estimate of provinces 1. Estimate of counties 2.
Latitude 56—58. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 300 or 250 yards, in East Highlands.
Ascends to 1100 yards, in the same province.
Range of mean annual temperature 44—36.

Native. Paludal. Found chiefly on and near the table land of the eastern Grampians, where the counties of Forfar and Aberdeen meet, at 800 to 1000 yards of altitude. It is said also to occur at a much lower elevation; namely, "on the banks of the South Esk, about half way up Glen Clova, and at a short distance below the Inn" (Flora of Forfarshire). This is within the region of cultivation, and perhaps below 300 yards of absolute height.

1231. CAREX STRICTA, *Good.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 [13 14 15 16 * 18].
South limit in Dorset, Sussex, ——— ?
North limit in Westmoreland, Northumberland ?
Estimate of provinces 12. Estimate of counties 20.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel ?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. An unsatisfactory species, very imperfectly known to British botanists, and often represented in herbaria by specimens of C. acuta or C. vulgaris. I have seen examples from the counties of Norfolk (Miss Bell), Cambridge (Rev. James Harris), Salop (Mr. T. B. Bell, Bot. Soc. Ed.), Chester and Lancaster (H. C. Watson), which appear to me correctly thus named. But the Scottish specimens which I have seen labelled as C. stricta, from the Edinburgh Society and from individual botanists of Edinburgh, appear to my eyes to belong to C. acuta. C. stricta is included by name in the manuscript Flora of Orkney, by Dr. Gillies, on his individual authority; but a specimen so named among the Orkney plants, several times before mentioned as probably collected and labelled by Dr. Gillies, is certainly C. vulgaris. In how many of the English counties C. stricta (Good.) really has been found, I am quite unprepared to say. It is reported from 21 or 22, some of them likely to prove errors. We have Mr. Borrer's authority for its occurrence so far north as Westmoreland. According to Sir Walter Trevelyan's list, it occurs in Faroe.

1232. CAREX ACUTA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. Sometimes labelled C. stricta, sometimes also C. paludosa, by British collectors. But although thus occasionally mistaken for other species, I have no reason to suppose many erroneous stations on record for C. acuta itself. The habitat of Orkney will require verification; but it is countenanced by the name of this species being included in the list of Faroe plants.

1233. CAREX SAXATILIS, *Linn. Herb.*
1233, b. CAREX GRAHAMI, *Boott.*

Area * * * * * * * * * * * * * * * 15 16 17.
South limit in Stirling, Perth, Forfar.
North limit in Sutherland.
Estimate of provinces 3. Estimate of counties 9.
Latitude 56—59. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 850 yards, in East Highlands.
Ascends to 1000 or 1050 yards, in West Highlands.
Range of mean annual temperature 38—36.

Native. Uliginal. To the four counties above mentioned, those of Aberdeen, Moray, West Inverness, and Dumbarton, with the Isle of Skye, may be added, as known to produce the Carex saxatilis. It has been suggested, by Dr. N. J. Andersson, and supported with considerable plausibility of argument, or fact, that Carex saxatilis is "the highest alpine form of C. vesicaria." See Bot. Gaz. ii. 253. C. Grahami certainly may be said to make a first step downwards from C. saxatilis towards C. vesicaria, and I suppose its Forfarshire station to be one of the lowest in which any form of C. saxatilis is found in Scotland. But the leap from C. Grahami to C. vesicaria is still left wide with us. Grahami is reported from two counties, Forfar and Perth (Br. Flo. edit. 6).

1234. CAREX FLAVA, *Linn.*
1234, b. CAREX ŒDERI, *Ehrh.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 950 or 1000 yards, in East Highlands.
Range of mean annual temperature 52—37.

Native. Paludal. In giving the above widely general distribution of this plant, it will be understood that C. flava and C. Œderi are taken together, and that it may possibly not apply to either of them singly. In several instances I am not prepared to say whether both alleged species, or one only, and which of them, occurs in some of

the counties, particularly those of the more southerly provinces. Indeed, the pretended species are so utterly undistinguishable by the book-characters, — copied from author to author, without regard to the realities of nature, and making no true contrast, one against another,—that I cannot even separate the specimens in my own herbarium into two species according to book-characters. Not that there are no obvious differences between the extreme forms, but because there are so many intermediate forms, to operate as connecting links, and render any decided line of separation difficult or impossible.

1235. CAREX EXTENSA, *Good.*

Area 1 2 3 4 [5] 6 7 * 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Orkney, Hebrides.
Estimate of provinces 16. Estimate of counties 40.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to North Isles.
Range of mean annual temperature 52—46.

Native. Littoral and Sub-littoral. The figure [5] referring to the province of Severn, in the line of area, is enclosed because I find no recorded station on the coast of that province; so that the figure would have rested solely on the authority of one locality quite inland, which is reported in the Flora of Shropshire,—"Whixhall Moss; Mr. F. Dickinson." Likely to occur on the coasts of Monmouth and Lincoln, that is, in provinces 5 and 8.

1236. CAREX PALLESCENS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Sutherland.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—59. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, or nearly so, in Channel.
Ascends to 600 yards, in East Highlands.
Range of mean annual temperature 51—41.

Native. Paludal, Sylvestral. Not a common plant in England, and perhaps more plentiful in Scotland. It is, however, sufficiently frequent in Britain to give some probability that a comital estimate of 75 might not have exceeded the truth; although as yet the species has been recorded from scarcely more than 50 counties. Included in the Faroe list; but apparently not hitherto found in our own North Isles.

1237. CAREX FULVA, *Good.*
1237, b. CAREX SPEIROSTACHYA, *Sm.*

Area general.
South limit in West Somerset, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in Channel.

Ascends to 650 yards, in East Highlands.

Range of mean annual temperature 51—40.

Native. Paludal. Most British botanists now appear willing to re-unite these two into one species; and I am disposed to go a step farther, by holding them not worth naming as separate varieties, seeing that I find myself often at a loss which name to apply to individual specimens. Dr. Bromfield would unite with them the C. distans also, but probably he confused these species together. C. fulva or speirostachya has been frequently misnamed C. distans by local botanists, both collectors and authors. See the remarks under head of "C. distans" below.

1238. CAREX DISTANS, *Linn.*

Area 1 2 3 4 5 6 7 [8] 9 [10] 11 * 13 14 15 16 17 [18].

South limit in Cornwall, Isle of Wight, Kent.

North limit in Sutherland, Banff, Argyle.

Estimate of provinces 15. Estimate of counties 50.

Latitude 50—59. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the sea level, in the Peninsula.

Ascends, at the sea level, to North Highlands.

Range of mean annual temperature 52—46.

Native. Littoral, Sub-littoral. A much confused species; several of its alleged stations, in all probability, belonging properly to C. speirostachya or to C. binervis. That all the inland localities recorded for C. distans, should be transferred to the other two species mentioned, I am not prepared to say; although most of them probably should be so assigned. The provinces of Trent and Ouse [8, 10] seem likely enough to produce the C. distans,

on their coast line; but only inland stations having been recorded, they are rejected for the present. Dr. Neill reported C. distans from Orkney and Shetland; but Mr. Syme and Mr. Edmondston mention C. binervis, and not C. distans, in those isles. Dr. Bromfield writes of this and the preceding species, in these words: "Are not C. fulva and C. distans simply forms of one and the same species? The differences, when fairly weighed, are very slight. Both inhabit the sea coast or inland places, fresh or salt-marsh ground, indifferently" (Phytol. iii. 1067). I have myself never found undoubted C. distans far from the shore, although it may have been seen a mile or two inland. Neither, on the other hand, have I seen C. fulva ever having more the appearance of a littoral plant than C. vulgaris or C. glauca; that is, as inland plants which can grow down to the coast or shore, although no special tendency to inhabit the shore may be traced in them. To my view, indeed, C. distans is less easily distinguished from C. binervis, than from C. fulva. In Babington's Manual we find the following series of names in succession to each other,—flava, Œderi, fulva, extensa, punctata, distans, binervis, lævigata,—from which it seems reasonable to assume, that the Author of the Manual looks upon distans as being next of kin to binervis; although the position of extensa, after fulva instead of preceding it, might be used as a counter-argument,—as one to show that ideas of affinity and resemblance had less influence in suggesting the series, than might be inferred from the positions of the other names.

1238, b. CAREX PUNCTATA, "*Gaud.*"

Area 1 * * * * * 7 * * * * [12].
South limit in Cornwall. [Cumberland ?]
North limit in Anglesea or Caernarvon.
Estimate of provinces 2. Estimate of counties 3.
Latitude 50—54. Local (Atla.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to North Wales.
Range of mean annual temperature 52—49.

Native. Sublittoral. A very local and dubious species, which has been seen by few English botanists. During several years, the only trust-worthy habitat on record, was that "near Beaumaris." (Hook. Brit. Flora). Babington gives the habitat differently, "Banks of the Menai, near Bangor." (Manual). Hooker and Arnott (Brit. Flora, edit. 6) convert these two descriptions into two localities, whether correctly or erroneously, I am not able to say. More recently, two other habitats have been added, in Cornwall and Cumberland. Mr. T. Westcombe, the discoverer of the Cornish station, says, "The locality, as nearly as I can describe it, is by the side of the foot-path on the face of the cliff, on the coast south of St. Austell, and three-fourths of a mile westward of Charlestown" (Phytologist iii. 57). The (only ?) Cornish specimen passed through my hands, between Mr. Westcombe and Dr. Boott. I felt some doubt of the name at the time, and still do so, but Dr. Boott pronounced it C. punctata; and his decision will be held to settle the doubt, I presume. The habitat in Cumberland was reported by Mr. Daniel Oliver, who describes the station as

being on the coast, about four miles southward from Whitehaven. How Mr. Oliver knew the plant to be C. punctata, is not stated; but he adds, "I have not, to my knowledge, seen this plant from any other station." I fear that our British specimens, if not all other examples of C. punctata, are but varieties of C. distans.

1239. CAREX BINERVIS, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1050 yards, in East Highlands.
Range of mean annual temperature 52—36.

Native. Ericetal. By uniting the inland "C. distans," so called, with the present species, the county estimate would be raised to 80; the name of "binervis" being absent from some of the inland lists and floras, where that of "distans" is included. I have only twice noted this species so high as 1000 yards, and both notes relate to Ben-na-bourd, though at different spots on the hill. On that hill Calluna vulgaris attains to the unusual height of nearly 1100 yards. In most parts of the Highlands the altitude of 1000 yards would imply the superarctic zone, as being above the limit of the Calluna.

1240. CAREX LÆVIGATA, *Sm.*

Area 1 2 3 * 5 6 7 * 9 10 11 12 13 * 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle (Islay), Dumbarton, Fife ?
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, in West Lowlands (Winch).
Range of mean annual temperature 52—45.

Native. Paludal, Sylvestral. The above is not satisfactory to me, as an account of the distribution of C. lævigata, though I know not how to make it better. The Catalogue published by the Botanical Society of Edinburgh (second edition) recognizes this as a plant found within 16 miles of that city, which may be due to an old record of its occurrence in Fifeshire. More northward, Don reported it as found in fir woods, near Forfar, in which county it has not been confirmed by Mr. Gardiner. Also, in a marsh near Aberdeen, according to Prof. J. Beattie quoted in English Flora. And lately, Mr. John Ball has published it as found by himself in "French Corrie," in Strath Affaric, at the N. W. corner of Moray, so high as 2000 or 3000 feet (Bot. Gaz. iii. 42). I fear that in all these three or four last named counties C. binervis may have been misnamed C. lævigata. The latter name occurs in the Flora of Berwick-on-Tweed, but the locality for the plant is perhaps in North-Durham or Northumberland only. Thus, the whole eastern side of Scotland may be considered doubtful, although one province is allowed to stand in the area.

1241. CAREX PANICEA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland (Neill), Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in East Highlands.
Range of mean annual temperature 52—38.

Native. Paludal, Pratal. A very common Carex; and one liable to very little doubt respecting its distribution; and yet not wholly free from some degree of uncertainty. Thus, Dr. Neill mentions it as seen in Shetland; and it is nevertheless excluded from the Flora of Shetland, by Mr. Edmondston;—perhaps, through inadvertence, as it is not mentioned even to introduce a reason for disregarding Neill's authority in the case of a species so familiar and general. Again, in my notes of measuring excursions into the Highlands, in the years 1841 and 1844, I find no memorandum of seeing C. panicea higher than 700 or 800 yards,—altitudes between those heights repeatedly occurring in the notes. But in 1832 I had made a note of C. panicea so high as 1250 yards on Ben-na-muic-dhu,—a time when I followed the British Flora in considering C. vaginata (phæostachya) a form or variety of C. panicea; and the elevated station may thus belong to the latter, more exclusively a mountain plant. "On the rocks of Stuich-an-lochan, above Loch-na-cai, Ben Lawers, along with C. vaginata" (Mr. J. T. Syme, MSS.).

1241, b. CAREX VAGINATA, *Tausch.*

Area * * * * * * * * * * * * * * * 15 16 17.
South limit in Dumbarton, Perth, Forfar.
North limit in Sutherland, Moray, Aberdeen.
Estimate of provinces 3. Estimate of counties 8.
Latitude 56—59. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 800 yards, less or more, in E. Highlands.
Ascends to 1000 yards, and upwards, in same province.
Range of mean annual temperature 39—36.

Native. Rupestral. Hitherto found chiefly in the counties of Perth, Forfar, and Aberdeen, within which it occurs on many hills, passing shortly into Moray. Professor Graham (Excurs. Sutherland, 1833) wrote, "I found this plant on Speecanconick, and think there is no doubt of its specific identity with C. panicea." Nearly twenty years later, Mr. Alexander G. Duff wrote, "Ben Voirlich, Loch Lomond, 25th July, 1851. This Carex, so far as I know, has been only found hitherto on the mountains of Clova and Braemar" (Bot. Gaz. iii. 140). It is doubtless very excusable for a young botanist not to know half the counties in which any given species of Carex has been found, and repeatedly recorded; but I do not understand why he should thus make a special record of his own imperfect knowledge on the subject in a periodical, or why the editor of a periodical should acquiesce in such an useless and (so far as it can have any influence) misleading addition to the announcement of a locality. The writers of the Phytologist, however, are greatly more faulty in this way, than were those of the Botanical Gazette, although this one illustration of a rather frequent botanical egotism

happens to be taken from the latter. The range of altitude is imperfectly ascertained, as intimated by a remark under Carex panicea.

1242. CAREX DEPAUPERATA, *Good.*

Area [1] * 3 * * * * * * * * * * * [15 16].
South limit in Kent, Surrey.
North limit in the same counties.
Estimate of provinces 1. Estimate of counties 2,
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 100 yards, less or more.
Range of mean annual temperature, about 49.

Native. Sylvestral. Very local. My specimens are from the neighbourhood of Godalming, in Surrey, sent by Mr. J. D. Salmon to the Botanical Society of London. It grows also in a small wood, at the back of Charlton church, in Kent, according to Mr. Curtis (B. G.) and the Rev. Dr. Goodenough (E. F.). According to Flora Devoniensis, it is frequent in shady woods and hedges in that county; but has any other botanist since found C. depauperata in the county of Devon? Don pretended that he found it in woods near Forfar. And on faith of the Flora Glottiana, it occurs in a small wood near Balvie, Dumbartonshire. On these unsupported testimonies it would seem better not to admit provinces 1, 15, 16, into the real area of a species otherwise so far distant from them, and so particularly local.

1243. CAREX CAPILLARIS, *Linn.*

Area * * * * [5] * * * * 10 11 * 13 * 15 * 17 18.
South limit in York, Durham, Dumfries?
North limit in Shetland? Sutherland, Ross.
Estimate of provinces 6. Estimate of counties 10.
Latitude 54—61. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to the coast level, in North Highlands.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 46—38.

Native. Rupestral. Among the ten counties recorded for this species, one may be summarily rejected, that of Hereford; and two others should be verified by the eyes and knowledge of a second botanist, or indirectly confirmed by the discovery of neighbouring habitats. Mr. William Stevens records (Phytol. iii. 392) that he found C. capillaris "on the top of a hill near Hartfell, in company with C. atrata." The two species are unlikely to be confused with any other British Carices, and the alleged station is not so unlikely as to warrant its rejection, although some degree of uncertainty may be allowed still to attach thereto. The other habitat, that of Shetland, might seem quite as probable in itself; but it is subject to collateral reasons for doubt; namely, the absence of the species from the lists for Faroe and Orkney, and the sole authority for it in Shetland, being the testimony of a youthful botanist, who was hasty and self-confident in his decisions, and who has published various very suspicious stations elsewhere. To the six counties above mentioned those of Perth, Forfar, and Aberdeen may be added, as being quite certain.

1244. CAREX LIMOSA, *Linn.*
1244, b. CAREX IRRIGUA, "*Hoppe.*"

Area [1] * * 4 5 6 7 * 9 10 11 12 13 14 15 16 17.
South limit in Glamorgan, Suffolk, Worcester?
North limit in Sutherland, Isle of Skye, Aberdeen.
Estimate of provinces 12. Estimate of counties 30.
Latitude 51—59. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse province.
Ascends to 200 yards, or upwards, in Highlands.
Range of mean annual temperature 48—45.

Native. Uliginal. Carex irrigua may possibly be a true species; but, if so, its stations cannot at present be satisfactorily extricated from those of C. limosa. It cannot be said that the county of Somerset is a very improbable one for C. limosa; but being the only county reported for this species, in the most southerly provinces, and resting only on bad authority (that of Mr. Swayne, in Bot. Guide), it is excluded. The county of Worcester is questioned, because the locality "Wichbury Hill, near Stourbridge," is given for Worcestershire by Mr Lees, and for Staffordshire by Dr. Garner. C. irrigua is said to have been found in Northumberland, Dumfries, Kirkcudbright, Ayr, and Dumbarton. The upper limit of neither species or variety has been correctly ascertained.

1245. CAREX RARIFLORA, *Sm.*

Area * * * * * * * * * * * * * 15 * [17].
South limit in Forfar.

North limit in Aberdeen, Moray ? [Sutherland ?]
Estimate of provinces 1. Estimate of counties 3.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, in East Highlands.
Ascends to 950 or 1000 yards, in same province.
Range of mean annual temperature 39—37.

Native. Uliginal. Chiefly found along the table-land of the mountain range which forms the boundary line of Forfar and Aberdeen shires, and on both sides of the water-shed. It is said to occur also on Loch-na-gar (Mr. H. M. Balfour), and Cairngorum (Rev. Mr. Fraser). Much doubt attaches to the more northerly habitat of Sutherland. Professor Graham, along with Mr. W. A. Stables and Mr. W. H. Campbell, pronounced the plant of Sutherland to be C. rariflora; but my specimens from that county, gathered by Dr. G. Macnab and the three other botanists mentioned, appear to be nearer C. limosa. Dr. Graham wrote thus in 1833; "Carex rariflora. — Observed near Oikel, by Mr. McNab. I afterwards found it by the road opposite the west side of Ben Hope; and Mr. Tyacke found it at the base of Ben Loyal. In 1825, Mr. Holme and I found it in Batcall Moss, between Riconick and Oldshore. I then considered it C. limosa, and I am still inclined to agree with those botanists who can see no good specific distinctions between C. rariflora, C. limosa, and C. irrigua."

CAREX USTULATA, *Wahl.*

Area [15].

Incognit. Stated to have been found "on Ben Lawers, very rare," by George Don; so rare, indeed, that not one

among the many botanists who have since been on that often examined hill, has again found it.

1246. CAREX STRIGOSA, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 *** [14 ** 17].
South limit in Somerset, Isle of Wight, Kent.
North limit in York, Lancaster.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. I have seen no Scottish example of this species. The North Highland province is probably an error, as was suggested in the New Botanist's Guide, although it has not been directly corrected within my knowledge. According to Mr. Maughan (Hook. Flo. Scot.) C. strigosa occurs in Arniston woods, Edinburgh; and it is allowed to stand in the Edinburgh Botanical Society's Catalogue, as a very rare species within their circuit of 16 miles. Mr. Babington also gives it in his Manual as found in Scotland. But the distance of Edinburgh beyond the English area of the species, and apparent absence of modern verifications, induces much distrust of the one outlying and ill-authenticated locality. Mr. R. Withers informs me that C. strigosa occurs near Bath, in Somerset, at about 50 yards of altitude, and in Wilts at 130 yards. The former height may be said to bring the species down to the coast level, although of course not to the sea level; and the plant probably descends lower in other provinces.

1247. CAREX SYLVATICA, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, ——— ?
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 or 800 yards, in East Highlands.
Range of mean annual temperature 51—40.

Native. Sylvestral. If it be a correct suggestion (N. B. G.) that "C. strigosa," so marked in the Ross Catalogue, really intended C. sylvatica, the North Highland province may be added to the area. But until it shall be fairly ascertained to occur in the North or West Highlands, its distribution will approximate it towards the English type. I do not know of its occurrence farther northward than Lanarkshire, on the western side of Scotland; but the county of Dumbarton might perhaps be assumed, on account of the species being given as "frequent" in Flora Glottiana. In England, it may have a comital generality, or nearly so. Rare on the mountains of the Highlands, but I possess a specimen gathered on the Clova mountains in 1832, at "2000—2500 feet," according to my note at the time. Supposing no mistake to have occurred about the station of that specimen, it helps to sanction an indication of the British type, by extending the zonal and climatal range of the species.

1248. CAREX PENDULA, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Kincardine, —— ?
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Sylvestral. Still less satisfactorily assigned to the British or general type of distribution, than is the preceding, on account of its rarity in Scotland. If I had not obtained a specimen from Kincardineshire (Mr. A. Croall) through the Botanical Society of London, hesitation would have been felt about receiving the other reported and unverified localities in the East Highlands; where it occurs in Breadalbane, according to the Rev. Dr. Stuart; in fir woods near Forfar, on the testimony of George Don; and on the banks of the river Findhorn, according to Dr. Innes, in Coll. Moray.

1249. CAREX PSEUDO-CYPERUS, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 * * * * 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Moray, Argyle (Islay).
Estimate of provinces 11. Estimate of counties 40.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.
Ascends to 150 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Paludal. Although this one appears to extend equally far northward with us, as the two preceding species, it is here restricted to the English type on account of its great rarity in Scotland. It is said to grow in the pond in front of Birdsyards, and at Castlehill, both near Forres, in Moray; and Lightfoot found it in Islay. Had it been planted in Moray? There is no sign of doubt about its true nativity there, given in the 'Collectanea for a Flora of Moray.' At 500 to 600 feet above the sea, at Landsdown, near Bath, Wilts, according to information from Mr. R. Withers. Mr. Babington does not admit it to be a native of Scotland at all.

1250. CAREX GLAUCA, *Scop.*
1250, b. CAREX MICHELIANA, *Sm.*
1250, c. CAREX STICTOCARPA, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Pratal, Paludal. Smith's two species above named, appear now to be referred to C. glauca by general consent. Probably this is rare above the agrarian region, or at any rate rarely ascending far above that region.

1251. CAREX PRÆCOX, *Jacq.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in East Highlands.
Range of mean annual temperature 52—44.

Native. Pascual, Ericetal. Said to be frequent about Glasgow, and hence probably to be found in the West Highland province, although I can adduce no positive testimony to this point, from my own notes or compilations. In the Floras of Moray and Aberdeen single localities only are indicated for C. præcox, but it is said to be frequent in Forfarshire. The Flora of Shetland has it "common" in those isles; and Dr. Neill and Mr. Syme both report it from Orkney. I think to have seen it so high as 800 yards in the East Highlands; but as some uncertainty attaches to this altitude, the species is not indicated up to the midarctic zone at present.

1251*. CAREX MONTANA, *Linn.*

Area * 2 * * 5.
South limit in Sussex.
North limit in Monmouth, Hereford.
Estimate of provinces 2. Estimate of counties 3.
Latitude 51—52. English type of distribution.

Agrarian region. Inferagrarian zone.
Descends to ——— ?
Ascends to ——— ? (100 yards, more or less?)
Range of mean annual temperature, say 49.

Native. Sylvestral? Rupestral? Only of late added to the flora of Britain; having been first discovered between Tonbridge Wells and Eridge, in Sussex, by Mr. Mitten; and subsequently found by or near the river Wye, in Monmouth and Hereford shires, by Mr. Purchas. For particulars, reference may be made to Eng. Bot. Supp. 2924; Phytologist, ii. 910, and iv. 341; Bot. Gaz. i. 327.

1252. CAREX PILULIFERA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—59. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1100 yards, in the East Highlands.
Range of mean annual temperature 52—36.

Native. Ericetal. It is somewhat remarkable that the name of this species should not appear in the lists for Orkney, Shetland, and Faroe, considering its wide area and high census in Britain, and also the great altitude attained on the mountains of Scotland. Balfour and Babington indicate only one locality for it in the Hebrides; but that one suffices to bring the census just within a provincial generality.

1253. CAREX TOMENTOSA, *Linn.*

Area * 2.
South limit in Wiltshire.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 2.
Latitude 51—52. Local (Eng.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends : — Ascends : — At 150 yards (Flower).
Range of mean annual temperature 49.

Native. Pratal or Paludal. Extremely local; having hitherto been found only in one station, although known for many years as a native of England. I am indebted to Mr. Robert Withers and Mr. T. B. Flower for specimens from the locality or station of "Water Meadows, Marston Maisy, in the North-east division of Wiltshire, between 400 and 500 feet above the sea." Marston is near the river Isis or upper Thames, and thus the actual station of this plant would be within the province of Thames, according to physical geography; while, in adhering to the arbitrary lines of separation between counties, it must be placed in that of the Channel. Here, as in various other similar instances, the discrepancy between natural and conventional boundaries introduces a degree of vagueness or falseness into botanico-geographical science, which could be avoided only by a course that would probably be deemed a greater evil and inconvenience; namely, by giving up the county-divisions altogether, tracing the boundaries of the provinces in accordance with physical geography, and forming new subdivisions of the provinces, which would unfortunately necessitate new names; the old county names becom-

ing inapplicable for divisions of Britain which could no longer correspond with them in boundaries or extent. The county of Wilts, for instance, belongs in its parts to three provinces,—the Channel, Thames, and Severn; although in this work the whole county is referred to the second of these provinces, to which its larger portion does geographically belong.

1254. CAREX CLANDESTINA, *Good.*

Area 1 2 * * 5.
South limit in Somerset, Wilts.
North limit in Hereford, Gloucester.
Estimate of provinces 3. Estimate of counties 4.
Latitude 51—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 100 or 200 yards.
Range of mean annual temperature 50—48.

Native. Pascual, Rupestral. The stations of this Carex have been increased considerably of late, although it does still remain more local in its area than might at first glance be gathered from the indication of three provinces, by their numbers above, with two intermediate blanks. The several localities are so distributed as to belong to three of our provinces, although their united area, if all were joined together, would not equal that of one of the provinces; and, indeed, they all lie within the great Severn-basin, or close by its natural boundaries. The following stations are on record;—Brean Down, in Somerset (Rev. Thomas Butler; Mr. T. B. Flower), Salisbury plain and elsewhere, in Wilts (Mr. Hussey; Mr. Flower), St. Vincent's Rocks, in Gloucester and Somerset

(Mrs. Russell, &c.), Hereford (Mr. A. T. Wilmott). Although these localities are all on the western side of England, I do not refer the distribution of the species to the Atlantic type, because the area as a whole is rather midland than strictly western.

1255. CAREX DIGITATA, *Linn.*

Area 1 2 * * 5 * * 8 * 10.
South limit in Somerset, Wilts.
North limit in York.
Estimate of provinces 5. Estimate of counties 6.
Latitude 51—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so, in Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 49—47.
Native. Sylvestral, Rupestral. This species has a distribution very similar with that of C. clandestina, except by its reappearance in two of the northern provinces of England. It occurs in Somerset, Wilts, Gloucester, Hereford, Nottingham, and York. The county of Derby requires verification, but is not improbable; it rests on the authority of Mr. Salt, in Mr. Winch's manuscripts. Mr. Withers estimates the altitude of stations in which this species grows, at 50 yards in Somerset, and at 100 yards in Monmouthshire.

1256. CAREX FILIFORMIS, *Linn.*

Area [1] * * 4 5 * 7 8 9 10 11 * 13 14 15 16 17.
South limit in Salop, Leicester, Suffolk. [Devon?]

North limit in Sutherland, Aberdeen, Argyle (Islay).
Estimate of provinces 13. Estimate of counties 25.
Latitude 52—59. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse province.
Ascends to 200 yards, in North Highlands.
Range of mean annual temperature 49—43.

Native. Uliginal, Paludal. Widely but thinly scattered through Britain; the two extremities, or the North Isles and the three most southerly provinces, being among the provincial exceptions. There is, indeed, a locality on record for the most southerly province of all; namely, in the Flora Devoniensis, where C. filiformis is reported to grow "near some old clay pits, by Teignbridge". No botanist individually testifies this alleged station, the authorship of the Flora Devoniensis being joint; and the mention of "clay" throws some degree of suspicion on the solitary station thus indicated for the species, and so far removed from its area as otherwise known.

1257. CAREX HIRTA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal, Pratal, &c. Most British botanists are doubtless accustomed to think of this Carex as one of

the vulgar weeds, too common to draw more than a moment's passing attention. And yet, when its true distribution comes to be inquired into, we find its place clearly below or above (whichever term may best suit the individual botanist) the class of the most general and common. Let us suppose that, instead of being unrecorded from the two most northerly provinces, it still remained unknown in provinces 1 and 2, or in 3 and 4, at the southern extremity of Britain,—in such case it might probably have been classed among the "plantæ rariores," and have found admission into the original Botanist's Guide, at least, if not into the New Guide likewise. Other plants even of wider generality in their distribution, than is the Carex hirta, found place in one or both of the Guides, on account of southern scarcity; for example, Geum rivale, Gentiana campestris, Gnaphalium sylvaticum, in the Old Guide. The next species, Carex ampullacea, affords us a more striking example of the fact, that individual experience will not make a true division between rare and common plants, for that species was a "rare plant" according to the ideas of Turner and Dillwyn, and barely missed inclusion in the New Guide, by the test of local Floras, although we shall see it below in the highest provincial class of generality.

1258. CAREX AMPULLACEA, *Good.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.
Ascends to 800 yards, in the East Highlands.
Range of mean annual temperature 52—39.

Native. Paludal, Uliginal. Though I have not ventured to assume quite the highest comital estimate for this species, it would be difficult to name two counties in which the presumption against the finding of C. ampullacea is stronger than that in favor of its occurrence. There are, however, still upwards of a score of counties, for which it remains unrecorded. See a remark on its former supposed rarity, under the preceding species. Seldom seen clearly within the arctic region.

1259. CAREX VESICARIA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Devon, Dorset, Sussex.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—46.

Native. Paludal. Less wide in its area, and less frequently repeated within the area inhabited, than is the case with its near ally the C. ampullacea. It is said to grow in Badenoch, Moray (Collectanea), and may therefore rise to 200 yards in that more northern county, which would imply a range of temperature descending one or two degrees lower than is indicated above.

1260. CARÊX PALUDOSA, *Good.*
1260, b. CAREX KOCHIANA, *DC.?*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Moray, Kincardine, Argyle.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Paludal. Occasionally mistakes appear to be made between this species and C. acuta or C. riparia; but these errors are probably not so frequent as to alter the distribution above indicated for the present species.

1261. CAREX RIPARIA, *Curt.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Banff, Forfar, Dumbarton?
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.
Native. Paludal. Frequent or common in England; much less so in Scotland, as would seem by the localities

on record. For its existence in the West Highland province I have no positive testimony to adduce; but the species being designated "frequent" in the Flora Glottiana, the county of Dumbarton would appear very probable. I am aware of only three localities on record for this Carex to the northward of Edinburgh and Glasgow; and hence its assignment to the English type, notwithstanding the one far northern locality "near Birkenbog, Banffshire," on authority of Rev. George Wilson, in Coll. Mor. It is that one locality only which causes the species to be given above as attaining to the superagrarian zone.

CAREX HORDEIFORMIS, *Wahl.*

Area [15].

Incognit. Said to have been found by Mr. Thomas Drummond, in a "small valley about three miles west of Panmuir," otherwise worded "in a den near Panmure, about nine miles south-east of Forfar." In Gardiner's Flora of Forfarshire, we are told that very close search was made for this plant one day in June, 1846, without success, "Every little hollow, nook, and crannie, in the direction indicated, was carefully examined," &c.

1262*. LEERSIA ORYZOIDES, *Sw.*

Area * 2 3.

South limit in Hants, Sussex.

North limit in Surrey.

Estimate of provinces 2. Estimate of counties 4.

Latitude 50—52. Local (Germ.) type of distribution.

Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 yards, less or more.
Range of mean annual temperature 51—49.

Native. Paludal. This recent and very interesting addition to the flora of Britain, was found in several stations in Hants and Sussex, in the years 1844—50, by Mr. Borrer, Mr. Mitten, and Dr. Bromfield. In 1851 it was discovered in a second province, that of the Thames, by Mr. A. W. Bennett; who found it by the bridge over the river Mole at Brockham, in Surrey; and it was in consequence shortly afterwards looked for and detected by myself many miles lower down the same river, by the foot bridge between East Molesey Church and Ember Mill (not Mile, as printed in the Botanical Gazette). Various particulars about the localities in Hants and Sussex, and many collateral and suggested remarks, may be seen in the Phytologist, iii. 1098, from the pen of the late Dr. Bromfield; whose explanatory and anecdotical style of writing was so well suited to that class of periodical literature, where discursive diffuseness forms rather a recommendation than an objection, and where the condensation and exactness of real science would prove unattractive to the majority of the readers.

1262. SPARTINA STRICTA, *Roth.*

Area 1 2 3 4 * * * 8.
South limit in Devon, Isle of Wight, Sussex, Kent.
North limit in Lincoln, Norfolk, Suffolk, Essex.
Estimate of provinces 5. Estimate of counties 8.
Latitude 50—54. Germanic type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to Trent province.
Range of mean annual temperature 52—49.

Native. Littoral. The counties in which this plant is known, being few, are all mentioned above in the line of its limits; the Isle of Wight being part of the same county with mainland Hants, on the coast of which latter it also occurs. Although extending westward to Devon, on the south coast of England, it is otherwise so decidedly a plant of the eastern and south eastern coasts, that no hesitation can be felt about its assignment to the Germanic or eastern type of distribution. But if it had been known to occur on the Welsh coast likewise, the English or southern type would have been named instead.

1263. SPARTINA ALTERNIFLORA, *Lois.*

Area (* 2).

Alien? Perfectly established in the one locality of Itchin Ferry, by Southampton, where it was discovered by Dr. Bromfield in the year 1836; and where he felt "pretty well assured it must have been introduced." (See NewBot. Guide, Supp. 571; Eng. Bot. Supp.; Phytol. iii. 1095).

1264. CYNODON DACTYLON, *Pers.*

Area 1 2 (3).
South limit in Cornwall, Devon, Dorset.
North limit in the same counties.
Estimate of provinces 2. Estimate of counties 3.
Latitude 50—51. Local (Atla.) type of distribution.
Agrarian region. Inferagrarian zone.

Descends to the sea level.

Ascends scarcely above the sea level.

Range of mean annual temperature 52—51.

Native. Sub-littoral, Glareal. Very local; but in plenty where found, on the sandy beach between Penzance and Marazion, in Cornwall, and in the like situation at Studley Bay, in Dorset. Babington's Manual is my authority for the existence of the Cynodon in Devon, without further particulars. The province of the Thames is indicated above, on account of the locality of Kew Green, in Surrey; in reference to which, it will afford an useful lesson if we contrast two differently worded reports of that locality; one, calculated (though, perhaps, not intentionally) to mislead and deceive the distant botanist; the other, having an opposite and truth-giving signification; that is, so far as a reader can judge of their merits, without having seen the spot itself. The words of each appear true; the deception lies in the suppression of circumstances which go to prove the station accidental. Such indirect misrepresentations are highly injurious in science, and ought to be discountenanced by editors as well as by botanists:—

1. "For the use of the youthful botanist resident in or near the great metropolis, to whom information of the whereabouts of any of the rarer species is a desideratum, I would mention that of Cynodon Dactylon, which I have seen in some abundance in the month of August, on Kew Green, Surrey. This, if I mistake not, is an unpublished station for this beautiful little grass."—*Walter Hill; Kew, December* 14, 1843. (Phytol. i. 870).

2. "I had an opportunity of examining the given station personally last autumn, and found the plant confined to about a square yard of ground, in the east corner of the Green, where I have no doubt it springs from a

stray plant or seeds ["an escape from the Botanic Garden"] at no very distant date."—*Thomas Meehan; Kew, April* 7, 1847. (Phytol. ii. 811).

1265. DIGITARIA HUMIFUSA, *Pers.*

Area * 2 3 4 * * * * * [10].
South limit in Hants, Surrey.
North limit in Norfolk, Suffolk.
Estimate of provinces 3. Estimate of counties 4.
Latitude 50—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 50 yards, more or less.
Range of mean annual temperature 51—49.

Denizen. Glareal. Misnamed D. sanguinalis until a recent date; and no stations appear to be known certainly for this species in any other county than those above mentioned. Although a local plant, its occurrence plentifully in several distant stations gives rise to a presumption in favour of its nativity. In one station in Surrey, recorded several years ago, this grass is now very rare, except in the gardens adjacent to the still unenclosed portion of the sandy heath on which it grew apparently wild, between the town and station of Weybridge. In Yorkshire, according to Hooker and Arnott; but not in Baines' Flora of that county. Also, in Sussex, on the same testimony; but I know of no authority for this latter county, except an error in a former edition of the British Flora, which placed Weybridge *in* Sussex, instead of Surrey;—a sort of contrast to another error, under the present species, in the sixth edition, which places Ipswich *out of* Suffolk.

DIGITARIA SANGUINALIS, *Scop.*

Area (* * 3 4 * * * * * * 11 * 13 * 15).

Alien. As intimated under the other species, several of its localities were formerly supposed to belong to the present species, which does appear occasionally as an introduced weed, chiefly in the provinces of Thames and Ouse; and it is said to have occurred in the neighbourhoods of Glasgow and Aberdeen; in the former, only a single plant; in the latter, introduced with ballast. It flowers late in the summer, and is very susceptible of injury from slight frost; so that it is not likely ever to become naturalized in England.

1266. PANICUM CRUS-GALLI, *Linn.*

Area (* 2 3) [18.]

Alien. This also is too impatient of frost, to become really naturalized in England, although stations have been occasionally reported, in various counties, and from a distant date. It would be curious to make out that Goodyer's grass, found "by a rivulet side near Petersfield, Hampshire," intended the Leersia oryzoides, and not the present species, to which it has been constantly referred. What the Panicum Crus-Galli of Barry's Orkney can be, it is difficult to guess, for the climate of Orkney would seem far too cold, and the summer too brief, for the growth of this grass.

1267. SETARIA VIRIDIS, *Beauv.*

Area * (2) 3 4 (* * * * * * 11 * * * 15).
South limit in Kent, Surrey. [Middlesex?]
North limit in Norfolk, Suffolk. [Cambridge?]
Estimate of provinces 2. Estimate of counties 4.
Latitude 51—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames.
Ascends to 50 yards, more or less.
Range of mean annual temperature 50—49.

Denizen. Glareal. This is considered an introduced plant by Mr. Babington, while the Digitaria humifusa is held an unquestioned native. But as both grow together in some of their stations, under similar circumstances, and as the stations for this appear to be at least equally numerous with those for the Digitaria, they are here placed in the same intermediate category between the classes of alien and native plants. Dr. Bromfield would seem to have believed S. viridis a native of England, (Phytol. iii. 1077), and to have expected its discovery in Hampshire. I have actually picked a root or two on the shore below Itchin ferry, near the station of Spartina alterniflora, but deemed it an accidental introduction in that spot. Has occurred on the Inch, at Aberdeen, introduced with ballast (Flo. Abred.). Fries deems it "vere indigena!" in Denmark and South Sweden.

1268. SETARIA VERTICILLATA, *Beauv.*

Area (* * 3 4 5 * * * * * 11).

Alien. This species appears to have been found more rarely, and usually under more suspicious circumstances, than S. viridis; nor is it unlikely that some of the stations on record are erroneous; for example, that of Stourbridge (Scott) on the borders of Worcester and Stafford. See also the Flora of Hertfordshire, where this one and the other two species are deemed introductions in that county, "brought with flax and cole seed to the oil-mills."

SETARIA GLAUCA, *Beauv.*

Area (1 * 3).

Alien. Reported to have been found in Somerset and Hertfordshire, but in stations to which it had evidently been introduced. A third county, that of Surrey, is given in Hooker and Arnott's Flora, on authority of Mr. Borrer. I had the advantage of accompanying Mr. Borrer to Weybridge, on an after visit to the station, when we could not see a single specimen remaining there; nor have I seen any on subsequent visits to the same spot. Dr. Bromfield suggested (Phytol. iii. 1077) that S. glauca would be found a native of Hants, equally with the other two species. To me it seems an improbable expectation, for S. glauca is too impatient of frost to become even naturalized here.

1269. PHALARIS ARUNDINACEA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 18. Estimate of counties 81.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 or 300 yards, in East Highlands.
Range of mean annual temperature 52—44.

Native. Paludal. This usually common plant was unnoticed by Dr. Balfour and Mr. Babington, during their excursion to the Hebrides in 1841, and hence the above estimate of 81 rather than 82. To remind botanists of the counties for which our lists of the commoner British plants are most deficient, it may not be amiss to enumerate the few in which the present species has not been noted or published; namely, those of Berks, Cardigan, Brecon, Radnor, Montgomery, Merioneth, Westmoreland, Man, Wigton, Ayr, Peebles, Selkirk, Haddington, Linlithgow, Stirling, Sutherland, Hebrides; in all, or nearly all, of which it may fairly be supposed to grow.

1270. PHALARIS CANARIENSIS, *Linn.*

Area (1 2 3 4 5 6 * 8 9 10 11 * 13 14 15).

Alien. Being much carried about Britain as food for caged birds, the 'Canary Grass' frequently appears as a waif or straggler near houses, and also in places resorted to by bird-catchers. In some degree, it may be said to

have naturalized itself on the southern coast of England, although but imperfectly.

PHALARIS PARADOXA, *Linn.*
("Alopecurus utriculatus.")

Area [* 2].

Alien. Extinct. Found by Mr. Hussey, in a field near Swanage, in 1847. It had disappeared in 1848, probably on account of a change of crop. The circumstance of its having been at first mistaken for Alopecurus (or Phalaris) utriculatus, has caused this latter name to appear among those of plants erroneously reported as English, like the Swertia and Bufonia; but there seems no call to make a separate paragraph for the A. utriculatus here; the name having scarcely got into works on British botany, except as an acknowledged error.

1271. ANTHOXANTHUM ODORATUM, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1150 yards, in East Highlands.
Range of mean annual temperature 52—35.

Native. Pratal, Sylvestral, &c. One among the commonest and most generally distributed of British grasses; but seldom observed in the superarctic zone.

HIEROCHLOE BOREALIS, *R. & S.*

Area [15].

Incognit. "Glen Cally, *Mr. G. Don.* No other botanist, perhaps, has found this grass in the locality named, which is a long narrow valley descending from the high mountains near the head of Caness into Glen Isla. It does not grow about the head of the glen, which was carefully examined in July, 1848." (Gardiner's Flora of Forfarshire).

1272. PHLEUM ALPINUM, *Aut. Ang.*

Area * * * * * * * * * * * * * * * 15 16.

South limit in Perth, Forfar.

North limit in Aberdeen, West Inverness.

Estimate of provinces 2. Estimate of counties 4.

Latitude 56—58. Highland type of distribution.

Arctic region. Midarctic—Superarctic zones.

Descends to 700 yards, in East Highlands.

Ascends to 1200 yards, in same province.

Range of mean annual temperature 40—34.

Native. Paludal, &c. A local plant in Britain, as yet known only in the four counties above mentioned. The lowest altitude seems almost to bring it within the inferarctic zone; but it is seldom seen so low as 700 yards, and perhaps only in unfavourable aspects. Though usually in wet or even watery places, occasionally it may be seen in those which would be rather designated "pratal," than "paludal," if they were situate in the agrarian region; but "meadows" can hardly be said to exist in

the arctic region, and the transition from paludal or uliginal is at once to pascual there, I am still disposed to believe the Scottish and Scandinavian "P. alpinum" one identical species, although Mr. Babington keeps them apart, giving to the Scottish plant the name of P. commutatum, as more allied to the Helvetic plant thus designated. Fries, however, does allow a "commutatum" in Scandinavia, simply as a local variety of the more frequent "alpinum." I fear that the attempted separation of Phleum alpinum and commutatum, like that formerly attempted between Gnaphalium alpinum and pusillum, and various other similar instances, indicates in the botanists themselves a minute capacity for seeing petty differences, rather than any capaciousness of judgment for rightly understanding those differences, and correctly estimating their value and bearings in science.

1273. PHLEUM PRATENSE, *Linn.*
1273, b. PHLEUM NODOSUM, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pratal, Pascual. It is doubtful whether the provincial area of this grass is strictly and naturally general. In the Shetland Flora we are informed that it is seen usually "in fields of sown grass, hence probably

introduced". Included as an Orkney plant in Lowe's list; but in that of Mr. Syme it is named as a species perhaps introduced. Babington and Balfour (Cat. Hebr.) appear to have seen it in the Hebrides only in the suspicious habitat of Roddal. In the Moray Flora, it is held doubtfully native of that county. I have a note of seeing it at Farr, on the north coast of Sutherland, but do not recollect the conditions under which it was seen there. The name occurs in Trevelyan's list of Faroe plants; and the species is widely distributed in Scandinavia. These two latter habitats may be considered indirectly to support the view of the species being truly native in the northern provinces of Scotland.

1274. PHLEUM ARENARIUM, *Linn.*

Area 1 2 3 4 * 6 7 * 9 10 11 12 * 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Banff, Aberdeen, Isle of Man.
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—58. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends, at the coast level, to East Highlands.
Range of mean annual temperature 52—47.

Native. Littoral, Glareal. As with Carex arenaria, this plant of the sandy shores is said to be occasionally found on sandy commons inland. Is there no locality for it on the western side of Scotland? Though extending over a wide range of latitude, it is so partial in Scotland, and so rare beyond the line of 57 latitude, that the English type seems to characterize its distribution better than the British. It might, however, be almost as well

considered intermediate between the Germanic and British; failing to reach the generality of the latter through its apparent absence from the western and northern coasts of Scotland.

1275. PHLEUM ASPERUM, *Jacq.*

Area [1] * 3 4 [5].
South limit in Somerset? Gloucester? Oxford?
North limit in Cambridge? Bedford?
Estimate of provinces 2. Estimate of counties 3.
Latitude 51—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level.
Ascends to 50 yards, more or less.
Range of mean annual temperature, say 49.

Native? Glareal. A very rare grass, or one almost unaccountably overlooked by the botanists of the present day. The five counties above mentioned have been recorded as producing it; but in that of Cambridge it would appear (Bot. Guide) to have been repeatedly sought without success; it is, however, included in Henslow's Catalogue. One specimen only is preserved in my British herbarium, and unfortunately the label of that single specimen has been lost. If still existent in English stations, this species may perhaps have been passed by as the P. arenarium; and it would be worth while carefully to examine any alleged inland localities for the latter, on the chance of finding P. asperum with it, or instead of it. For the present, the alleged counties in the Thames and Ouse provinces are retained; the others being rejected.

1276. PHLEUM BOEHMERI, *Wibel.*

Area * * 3 4 [5].
South limit in Herts, Suffolk.
North limit in Norfolk, Cambridge.
Estimate of provinces 2. Estimate of counties 4.
Latitude 51—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse.
Ascends to 50 yards, more or less.
Range of mean annual temperature 49.

Native. Glareal. The four counties above mentioned undoubtedly produce this local grass; that of Gloucester, on the authority of Buckman's Guide, being very probably erroneous. Mr. Prentice writes that, "Phleum Boehmeri is certainly not to be found near Cheltenham."—"Phleum asperum is not to be found either at Marl Hill or Bays Hill, the localities indicated for it and P. Boehmeri, by Mr. Buckman." (Phytol. ii. 885).

PHLEUM MICHELII, *All.*

Area [15].

Incognit. Supposed to have been discovered on the mountains of Clova, by George Don; but never found again. Don has the following passage, on this and other grasses, in Headrick's Agricultural Survey of Forfarshire: —"Lately I discovered three other grasses, new to Britain, viz. the Avena plano-culmis of Schrader's Flora Germanica, producing a great quantity of foliage; the Aira lævigata; and the Phleum Michelii, the Phalaris alpina of

the German authors: these grasses grow on the very summit of the highest mountains." It is presumed that the Avena plano-culmis, of the above passage, is the Avena alpina treated in this work under A. pratensis;—that the Aira lævigata is the Aira alpina;—but what the alleged Phleum Michelii is, still remains to be determined. Can it be the Alopecurus alpestris, to be presently mentioned under A. alpinus below? True, the figure in English Botany does not represent an Alopecurus technically; but it bears that first-glance resemblance to my supposed A. alpestris, which may suggest the possibility of Don having seen the one, and somehow substituted the other for it.

1277. ALOPECURUS ALPINUS, *Sm.*

Area * * * * * * * * * * * * * * 15 * 17.
South limit in Perth, Forfar, Aberdeen.
North limit in Ross, Moray.
Estimate of provinces 2. Estimate of counties 5.
Latitude 56—58. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 700 yards, in East Highlands.
Ascends to 1200 yards, in the same province.
Range of mean annual temperature 40—34.

Native. Paludal, Uliginal. The counties above named are all that at present are known to produce this arctic species, hitherto perhaps quite unknown on the Continent of Europe. Like the Phleum alpinum, its associate in several stations, this one also descends nearly or quite into the inferarctic zone. I have specimens in my herbarium, collected in Canlochen glen, Forfarshire, so intermediate between A. alpinus and A. pratensis, that I

hesitate about assigning either name to them. Perhaps this intermediate plant is Wahlenberg's variety 'alpestris,' placed by that Author under A. pratensis. The spike is less dense than in either of the species named, longer and more slender than that of A. alpinus; the glumes, pales, and awns are longer than those of A. alpinus, shorter than those of A. pratensis; glumes and pales narrower and more purple than in either of them; the under surface of the leaves much smoother than in A. pratensis. See a query under head of Phleum Michelii?

1278. ALOPECURUS PRATENSIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 400 yards, in East Highlands.

Range of mean annual temperature 52—43.

Native. Pratal. This very common British grass was not observed in the Hebrides by Messrs. Babington and Balfour; but its general occurrence elsewhere in the agrarian region would seem to warrant the inclusion of those isles in the comital estimate. Perhaps it has been introduced to some of its higher and more northerly stations, like Phleum pratense. Included in Trevelyan's list of Faroe plants, which so far countenances the supposition of its being native up to the North Isles of Scotland; although it may possibly have been introduced to these and to Faroe also.

1279. ALOPECURUS GENICULATUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Paludal. More generally common through Britain than A. pratensis, for that term "common" is applied to this species even so far north as Shetland; while its upper and northerly localities must also be less open to suspicion of agricultural or accidental introduction. Possibly it will be found in the lower arctic zone.

1280. ALOPECURUS FULVUS, *Sm.*

Area * 2 3 4 5 * 7 * * * * * * * [15].
South limit in Wilts, Sussex, Surrey.
North limit in Norfolk, Stafford, Denbigh.
Estimate of provinces 5. Estimate of counties 12.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native. Paludal. Of this rather unsatisfactory species I have seen specimens only from Surrey and Essex; and

feeling at a loss how far the other alleged counties can be relied upon, I proceed to enumerate them, with their respective witnesses; namely, Wilts (Mr. R. Withers; Mr. T. B. Flower), Sussex (Rev. W. W. Newbould;—*not seen* in the county by Mr. Borrer), Surrey (H. C. Watson, in station pointed out by Mr. Borrer), Hertford (Flo. Hertf.), Essex (Mr. Babington; Mr. Bentall), Norfolk (Hist. Yar., &c.), Hunts (Rev. W. W. Newbould), Northampton (Mr. Notcutt), Warwick or Stafford ("Edgbaston," With. Arr.; Mr. S. Freeman), Stafford ("Burton," Garner, Nat. Hist.), Denbigh (Mr. J. E. Bowman), Fife and Forfar ("Mess. Don", in Hook. Scot.). See some remarks on this species, as distinct or not from A. geniculatus, under head of A. bulbosus.

1281. ALOPECURUS BULBOSUS, *Linn.*

Area 1 2 3 4 5 6 * * * * 11.
South limit in Devon, Isle of Wight, Kent.
North limit in Durham, Norfolk, Gloucester.
Estimate of provinces 7. Estimate of counties 11.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at or near the sea level, to Tyne.
Range of mean annual temperature 51 49.

Native. Littoral, Paludal, &c. A very dubious species, said to have been found in Devon (Mr. T. B. Flower), Somerset (Rev. W. H. Coleman), Dorset (Mr. Lambert), Isle of Wight (Dr. Bromfield), Sussex (Mr. Borrer), Kent (Dr. Wilmer), Suffolk (Mr. Wigg), Norfolk (Mr. James Paget, &c.), Gloucester (Mr. Thwaites), Glamorgan ("Lightfoot's Herbarium"), and Durham (Mr. Backhouse, in Flo.

N. D.). But if there be any real species included under this name, truly distinct from A. geniculatus, some of the alleged habitats may likely belong only to a variety of the latter. Several local writers express doubts about the distinctness of the species. Dr. Bromfield (in Phytol. iii. 1079) wrote, "I cannot rid my mind of the impression that A. bulbosus and fulvus are but states, or perhaps permanent varieties, of A. geniculatus, much as I could wish to be convinced to the contrary by the many and able botanists who still keep them apart." And the Authors of the 'Natural History of Yarmouth' say of the three supposed species, seen all growing together, that they "may be traced into one another by the closest and most regular gradations." A. fulvus has renewed itself by seed in my garden, during half a dozen successive years, and retained its character derived from the colour and form of the anthers, without lapsing into A. geniculatus, or becoming pseudo-bulbous at the base of the stem. It is annual there; perhaps, because growing on dry ground, though frequently watered in dry weather.

1282. ALOPECURUS AGRESTIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * (13 14 15).
South limit in Devon, Isle of Wight, Kent.
North limit in Northumberland, Lancaster. (Scotland.)
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—48.

Native or Colonist. Agrestal. Common in the south of England, decreasing northward, and under much suspicion of having been introduced into the six or eight Scottish counties, where it has been found of late years. The English botanists (Lightfoot and Hooker) who wrote Scottish Floras, after a very brief examination of Scotland, enumerate A. agrestis among the native plants, without expressing doubt of its nativity there, or giving any localities; a course from which the fair inference would be (or should be) that they had found the species widely spread, and frequent in Scotland. Nevertheless, it may be doubted, without much presumption of injustice to those Authors, whether either of them had ever seen a Scottish example of the species, unless by chance and rarely in some sown field.

1283. KNAPPIA AGROSTIDEA, *Sm.*

Area * * [3] * * * 7 * * * * * * (14).
South limit in [Essex?].
North limit in Anglesea. (Haddington).
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local type of distribution.
Agrarian region. Inferagrarian zone.
Descends: — Ascends: — At the sea or coast level.
Range of mean annual temperature, say 49.

Native. Littoral, Glareal. Having seen specimens from Anglesea only, and finding no modern verification of Lobel's quoted station, "a few miles from Lee, Essex", I have given the distribution above as if restricted to the one local habitat. The plant now grows at Guillon Links, Haddington; but is said to have been sown there at

several times by different botanists. (See Report B. S. Ed. in Bot. Gaz. iii. 112).

1284. GASTRIDIUM LENDIGERUM, *Gaud.*

Area 1 2 3 4 5 6 [7].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Norfolk, Warwick, Glamorgan.
Estimate of provinces 6. Estimate of counties 20.
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, or upwards, in England.
Range of mean annual temperature 52—49.

Native. Agrestal, &c. On the testimony of Mr. Griffith (in B. G.) this grass is said to occur in Denbigh and Flint; but while unsupported by the authority of any other botanist, it appears safer not to rely upon the localities which Mr. Griffith supposed to belong to G. lendigerum. Its existence so far northward, however, is not to be held very improbable, independently of the want of sufficiently good authority. Though usually found on or near the coast, it is also occasionally an inland plant. In Kent and Surrey, I have seen it about the margins of woods, and in sterile pastures where the soil is an admixture of sand and clayey loam, wet and adhesive in winter, baking hard and dry in summer. More an eastern, than a western, species, while its occurrence in the provinces of Severn, Peninsula, and South Wales, must remove it from the Germanic to the English type of distribution.

1285. POLYPOGON LITTORALIS, *Sm.*

Area * 2 3 4.
South limit in Hants, Kent. [Dorset?].
North limit in Norfolk, Essex.
Estimate of provinces 3. Estimate of counties 4.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends, at the sea or coast level, to Ouse.
Range of mean annual temperature 51—49.

Native. Littoral, Paludal. Quite local. I have seen specimens from Hants (Dr. Bromfield), Kent (H. C. Watson), and Norfolk (Mr. Babington). Mr. Dickson is reported to have found it on the Essex coast, which is probable enough. And Dr. Salter includes the name in his list of plants growing within eight miles of Poole, in Dorset. This last habitat is now rendered more probable by Dr. Bromfield's subsequent discovery of the species in two spots in Hampshire, its only known habitat on the south coast of England, other than Dr. Salter's. But I still hesitate to rely upon the single authority of the Poole list in this respect, for two reasons combined. First, because there is only the name, with the sign of rarity affixed, but no station specified; while in upwards of a hundred other instances, and many of them for much less rare plants, special localities are mentioned. Secondly, because I have had a maritime form of Agrostis alba, from the south coast, sent or shown to me as P. littoralis, in more than one instance, and by botanists fully as likely to have correctly distinguished the P. littoralis and A. alba, as was Dr. Salter at the date of his Poole list.

1286. POLYPOGON MONSPELIENSIS, *Desf.*

Area * 2 3 4 [5] * * * * * * * * * (15).
South limit in Hants, Kent.
North limit in Norfolk, Essex.
Estimate of provinces 3. Estimate of counties 4.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends, at the sea or coast level, to Ouse.
Range of mean annual temperature 51—49.

Native. Littoral, Paludal. Specimens are in my herbarium from the four counties mentioned above. The neighbourhood of Bristol, on authority of Miss Worsley, was indicated for this species in the New Botanist's Guide; but there appears to have been an error in that record. I am indebted to Mr. Brand for a specimen collected by Mr. Wallich, on the ballast heaps at St. David's, in Fifeshire; to which this species had doubtless been introduced.

1287. MILIUM EFFUSUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 350 or 400 yards, in Lake province.

Range of mean annual temperature 51—44.

Native. Sylvestral. The North Isles is enclosed in the line of area, because the Milium has been reported only from the "mill-dam, Pabdale," in Dr. Gillies' unpublished Flora of Orkney. There seems here the double chance of error, that the species may either have been mistaken, or otherwise have been introduced to the station given. Widely diffused in Scandinavia; absent from the Faroe list; re-appearing in that of Iceland plants. Thus, there would be no geographical presumption against the occurrence of this grass in Orkney, were it known in the North Highlands, or in other groups of the province of the North Isles.

1288. APERA SPICA-VENTI, *Beauv.*

Area * 2 3 4 (5 [6 7 8] 9) 10 (11 12) * [14].

South limit in North Hants, Kent.

North limit in York. (Lancaster).

Estimate of provinces 4 (6). Estimate of counties 10 (15).

Latitude 51—55. Germanic type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Thames.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 50—48.

Colonist. Agrestal. Abundant in sandy fields in some counties of the Thames and Ouse provinces, where it is perfectly established as a weed, if introduced in times long past. Very local in the province of Channel, and perhaps limited to that particular portion of it, in North Hants, which physically forms part of the Thames basin, although adherence to county boundaries will unite that portion

with the Channel province. It appears also to occur, more or less temporarily, in the counties of Warwick, Chester, Lancaster, and York. But those of Salop, Glamorgan, Denbigh, Nottingham, Durham, Northumberland, Cumberland, and Edinburgh are little to be relied upon; the species having been mistaken, or having appeared there only as an occasional straggler introduced by agriculture.

1288*. APERA INTERRUPTA, *Beauv.*

Area * * * 4.
South limit in Suffolk.
North limit in Norfolk.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to ——— ?
Ascends to ——— ? At or near the coast level.
Range of mean annual temperature 49.

Colonist? Agrestal? Distinguished from A. Spica-venti, only three or four years ago in this country; and known as yet from one habitat only, though one extending into two counties; namely, the neighbourhood of Thetford, in Norfolk. Perhaps it will be found also in other localities for A. Spica-venti, as the two are said to grow intermingled about Thetford. Not having seen the station, I am unable to say from the unprecise words of other botanists, whether the terms "colonist" and "agrestal" correctly describe the condition and situation of A. interrupta.

1289. AGROSTIS SETACEA, *Curt.*

Area 2 [3] * * 6 [7 * * 10].
South limit in Cornwall, Isle of Wight, —— ?
North limit in Glamorgan, Hants, —— ?
Estimate of provinces 3. Estimate of counties 6.
Latitude 50—52. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, or upwards, in England.
Range of mean annual temperature 52—49.

Native. Glareal, Ericetal. Certainly found in Cornwall, Devon, Somerset, Dorset, Hants, and Glamorgan; uncertain in Sussex and Surrey; supposed to have been erroneously reported in Oxford, Denbigh, and York. According to the Botanist's Guide, it grows plentifully on Bagshot Heath, in Surrey (Mr. Curtis), and on wet commons in Sussex (Mr. Borrer). The chief portion of Bagshot Heath is situate in Berkshire, extending somewhat into Surrey. I have walked over some part of the Surrey portion without finding Agrostis setacea; but as Curtis must have known the species well enough, it may still be supposed likely to exist elsewhere upon that wide tract. As it is a plant of dry and sandy ground, not one adapted to "wet" commons, I suppose some error about the habitat of Sussex; more especially as the name is left unmarked in a Catalogue of British Plants, obligingly checked for me, for the county of Surrey, by Mr. Borrer himself. Mr. Cooper, in his Botany of Sussex, gives the vicinity of Heathfield as the only locality for this grass in the county of Sussex. The authority for Oxford, is Walker's Flora (See N. B. G. p. 606); that for

Denbigh, is the Faunula Grustensis; and that for Yorkshire, is Mr. Brunton, in the Botanist's Guide. I have not seen any specimen from Devon (Mr. Curtis, &c.), or Glamorgan (Mr. Woods; Mr. Withers); but the witnesses for those counties seem quite sufficient, where there exists no special ground for doubt independently of the testimony.

1290. AGROSTIS CANINA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.
Native. Pascual, &c. My own notes and lists are singularly deficient in their mention of this grass, considering the wide area, and frequency of occurrence, indicated for it by the local Floras, &c. The witnesses for its existence in Shetland and Orkney, respectively, are Mr. Edmondston and Mr. Syme; and by Professor Graham it was reported from Sutherland.

1291. AGROSTIS VULGARIS, *With.*
1291, b. AGROSTIS PUMILA, *Lightf.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 yards, or upwards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Pascual, Ericetal, &c. An abundant grass, and probably rising higher than 800 yards, on the Highland mountains. Not unlikely, the names of these three species,—canina, vulgaris, alba,—are frequently misapplied or crossed; their mutual resemblances, their variability of habit and colour, and the small size of their flowers, all conducing to confusion or errors of name.

1292. AGROSTIS ALBA, *Linn.*
1292, b. AGROSTIS STOLONIFERA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, or upwards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pascual, Agrestal, &c. Perhaps ascends into the arctic region, although I possess no certain note or information sufficient to establish this supposition as a fact.

1293. AMMOPHILA ARUNDINACEA, *Host.*

Area 1 2 3 4 [5] 6 7 8 9 10 11 * 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to North Isles.
Range of mean annual temperature 52—45.
Native. Littoral, Glareal. There are yet two exceptions to the provincial generality of this species, so far as the published reports and my private notes show its distribution. I believe to have seen it at Allonby, on the coast of Cumberland, which would fill in the vacancy for the Lake province, if made certain. The other province, that of Severn, has a very limited coast line, and one for which we have yet very little botanical information published; namely, the county of Monmouth, with a small portion of Gloucester. The No. for that province [5] is excluded in the line of area, as at present resting only on the authority of Mr. Edwin Lees, who mentions the inland county of Worcester for this littoral grass, in the New Botanist's Guide,—perhaps through inadvertence; although, as some other littoral plants do occur in certain saline spots in the valley of Severn, it is possible that the Ammophila also may be one among them.

1294. ARUNDO PHRAGMITES, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.
Native. Paludal. Not enumerated in the lists of species observed in the Isle of Man, by Professor Edward Forbes or Mr. James Macnab. And as it is equally absent from a few other local lists, its census may possibly not quite rise to a comital generality.

1295. ARUNDO CALAMAGROSTIS, *Linn.*

Area 1 2 3 4 5 6 * 8 9 10 * [12].
South limit in Devon? Dorset? Hants, Sussex, Kent.
North limit in York, Lancaster. [Cumberland?]
Estimate of provinces 9. Estimate of counties 25.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Native. Sylvestral, Paludal. Probably the name of A. Calamagrostis has been several times misapplied to the more frequent A. Epigejos; but I have not the means of

correcting these supposed errors, by assigning the stations severally to the right species. I have seen specimens of this species from Hertford (Rev. W. H. Coleman), Suffolk (Mr. C. J. F. Bunbury), Salop (Mr. J. E. Bowman), and York (Mr. James Ward). Provinces 1, 6, 8, 9, and especially 12, may be said to require verification, equally with at least half of the counties on record for A. Calamagrostis.

1296. Arundo Epigejos, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Devon, Isle of Wight, Kent.
North limit in Aberdeen, Argyle (Mull).
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 or 300 yards, in East Highlands.
Range of mean annual temperature 51—44.

Native. Sylvestral, Paludal. Considerably more frequent than A. Calamagrostis, though still not a common plant. Assigned to the English type on account of its rarity in Scotland, with an apparently total absence from the two most northerly provinces, and adjacent parts of the East and West Highlands. And yet its occurrence so far north as Aberdeenshire and the Isle of Mull, together with the altitude attained by it in the former county, approximates its area and range to those of plants assigned to the British type. Dr. Macnab is reported to have found A. Epigejos in Braemar, below the Bridge of Dee (B. S. Ed. Report First, page 31); and in the Northern Flora, by Dr. Alexander Murray, it is said to occur "in Braemar,

several miles below Invercauld, on the south side of the river [Dee], among wood." These stations, if not the same, are presumed to be somewhere between 500 and 1000 feet in altitude. Very slightly beyond the latitudinal line of 57.

1298. ARUNDO STRICTA, *Schrad.*
1297. ARUNDO LAPPONICA, *Aut. Brit.*

Area * * * * * * * * 9 * * * * * [15].
South limit in Cheshire.
North limit in the same county. [Forfar.]
Estimate of provinces 1. Estimate of counties 1.
Latitude 53—54. Local (Scot.) type of distribution.
Agrarian region. Midagrarian zone.
Descends : — ? Ascends : — ? (At a slight altitude).
Range of mean annual temperature, say 48.

Native. Paludal. Arundo stricta was formerly found in the White-Mire (or "muir") Moss, about one mile from the town of Forfar, but was subsequently destroyed there by drainage. It has recently been re-discovered by the Rev. G. E. Smith, who found it at Oak-mere, in Delamere Forest, in Cheshire. A. lapponica is not known in Britain; having as yet only one recorded habitat, involving one or more stations; namely, Lough Neagh, "and other places in the county of Antrim," Ireland. British describing authors (Arnott, Babington), now place the Irish plant as a variety of the A. stricta; while so lately as 1847, Sir William Hooker declared (Lond. Jour. Bot. No. 69, p. 473) that the Irish and Cheshire plants were quite distinct from each other. A question arose, to what distributive type a species found only in Cheshire should be referred? The fact of the other, though now extinct,

locality having been in eastern Scotland, in connexion with a third locality for possibly the same species in the north of Ireland, shows the boreal tendency of the species to be greater than its tendency towards the south, or specially to east or west.

1299. SESLERIA CÆRULEA, *Scop.*

Area * * * * [5] * * * * 10 11 12 * * 15 * 17.
S. limit in York, Durham, Westmoreland, Cumberland.
North limit in Ross, Perth, Stirling, Northumberland.
Estimate of provinces 5. Estimate of counties 8.
Latitude 54—58. Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 300 yards, or lower, in Humber.
Ascends to 850 or 900 yards, in East Highlands.
Range of mean annual temperature 45—38.

Native. Rupestral, &c. The eight counties above named are all of those in which stations have been recorded on reliable authority. The specific name of 'cærulea' has led to error in some few instances, through the substitution of the generic name 'Sesleria' instead of 'Melica' or 'Molinia'. Whether any similar inadvertence has led to the enumeration of Sesleria cærulea among the plants of Shropshire, or whether it was a mistake about the plant itself, I am unprepared to say; but Sesleria cærulea is entered in the Flora of Shropshire, on the bad authority of Mr. Spare, without any doubt being expressed by the Author of the Flora,—authority designated *bad*, because the only authority for *several* suspicious species or stations published in that Flora; and when we find the same name repeatedly cited, as the only authority for species unlikely to be found in the places indicated, dis-

trust is unavoidable and warranted. The lowest stations may likely occur in Yorkshire, but what is their altitude remains to be shown; possibly the Sesleria may descend into the midagrarian zone. I have seen no specimen from the Lake or North Highland provinces.

1300. AIRA CÆSPITOSA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, more or less, in East Highlands.
Range of mean annual temperature 52—37.

Native. Pratal, Paludal, &c. On account of the difficulty of distinguishing between this species and A. alpina, especially in their viviparous states so usually found high on the mountains, the upper limits cannot be positively indicated. When seen of small size, or viviparous, or at high altitudes, this species is often called by the name of A. alpina.

1301. AIRA ALPINA, *Linn.*

Area * * * * * * [7 * * * 11] * * * 15 16 17 18.
South limit in Stirling, Perth, Forfar.
North limit in Hebrides, Sutherland. [Orkney.]
Estimate of provinces 4. Estimate of counties 10.
Latitude 56—59. Highland type of distribution.

Arctic region. Midarctic—Superarctic zones.

Descends to 900 yards, less or more, in Hebrides?

Ascends to 1350 or 1400 yards, in East Highlands.

Range of mean annual temperature 37—33.

Native. Rupestral, &c. It is impossible at this time correctly to distinguish the true stations for the present species from those of A. cæspitosa when found high on the mountains; the viviparous states of the latter having been very usually designated "alpina" when found in the arctic zones; and perhaps the same may be also true, to some considerable extent, of the ordinary or non-viviparous states as well. I confess my inability satisfactorily to separate even the specimens preserved in my own herbarium, and that I must consequently distrust my own notes of the stations and altitudes of the alleged two species, made on the mountains, at different dates, from 1832 to 1844. As little, I fear, are the published or manuscript records of other botanists to be relied upon. Such as I find them, so is the above formula of distribution filled in, after rejecting some of the least probable stations and altitudes; as, for example, Wales (British Flora) and Durham (Flo. N. D.),—the sea side near Dundee (G. Don), and a pond in Orkney (Dr. Gillies). By way of accounting for the frequent expressions of doubt or distrust in various parts of this work, I would take the opportunity suggested by a difficult species, to point out a strong difference of position, in this respect, between the writer of a Cybele and the writer of a Flora. If the latter can only obtain a few good and well-marked examples to be described, he has no absolute necessity to trouble himself or his readers about the doubtful and difficult specimens. With the writer of a Cybele it is far different; for he must know (as far as it is possible for him to know) to which species each individual specimen is

to be assigned, as it may pass under his eye; and likewise, to which species he must assign each and every single station placed on record, whether under a right or under a wrong name. To the degree or extent in which he fails in this (often quite impossible) attempt, to the same degree or extent will he be in danger of mis-describing the distribution of allied and confused species. In the instance here before us, the failure leaves the true upper limit of Aira cæspitosa uncertain; while not only are both the upper and lower limits of Aira alpina left equally uncertain, but its provincial area, comital census, northern and southern limits, must all partake of the like uncertainty. This explanation may be deemed a divergence from the onward course of the Cybele; but this and other divergences, introduced into so many of the notes subjoined to the regular formula here used for illustrating distribution, are intended to convey suggestions to other botanists, explanatory of botanical geography;—explanatory of the objects to be attained, and the difficulties to be overcome, in a department of botany as yet quite elementary and progressive; and concerning which few of the botanists of Britain can have yet had much experience, or seem to have imbibed very clear and ample ideas.

1302. AIRA FLEXUOSA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.

Ascends to 1300 yards, in East Highlands.

Range of mean annual temperature 52—33.

Native. Ericetal. The highest station mentioned for this species among my own notes is at 3700 feet; but Dr. Dickie reports it at 3887 feet, and his higher elevation is accordingly adopted above. Its narrower leaves and different aspect of the panicle usually suffice to prevent such a mistake, but I have received this species under the name of alpina, from an Edinburgh botanist, who had collected it as such upon the Highland mountains.

1303. AIRA CARYOPHYLLEA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Sutherland.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 450 yards, in East Highlands.

Range of mean annual temperature 52—42.

Native. Glareal, &c. Perhaps ascends into the inferarctic zone, as it runs quite up to the limits of cultivation in several of the highland valleys. Though not observed in the Hebrides, the full estimate of 82 counties is more likely to be correct than any less number would be. The species is said to be "common near Swanbister" in Orkney, and "not rare" in Shetland; but it is absent from the Faroe list.

1304. AIRA PRÆCOX, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 550 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Glareal, &c. This was observed by myself in the road through Drumochter Pass, at the head of Moray, which was reckoned at 1530 feet. Dr. Dickie says that it grows up to 1715 feet in Aberdeenshire. The intermediate altitude of 1650 feet is taken.

1305. AIRA CANESCENS, *Linn.*

Area [1] 2 3 4 * * * [8].
South limit in Dorset? Kent?
North limit in Norfolk, Suffolk.
Estimate of provinces 3. Estimate of counties 4.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse or Channel.
Ascends, scarcely above the coast level.
Range of mean annual temperature 51—49.
Native. Littoral, Glareal. Perhaps the area and range here given for this species may be too wide. I have seen specimens only from the east coast of Norfolk (Mr. S. P.

Woodward, &c.). It has been also published as found in Somerset (Dr. Southby, in N. B. G.), Dorset (Pulteney, quoted in B. G.; Salter, Cat.), Kent (G. E. Smith, S. K. Cat.), Suffolk (Eng. Flora, &c.), and Nottingham (Deering, quoted in Flo. Nott.). Of these six counties, it will be seen that two are received without doubt, two are questioned as requiring verification, and two are quite rejected until verified.

1306. LAGURUS OVATUS, *Linn.*

Area [* * 3].

Sarnian. Incognit in England. Long known as a plant of Guernsey. I am not aware that it is anywhere in print as an English plant; but a specimen is in my herbarium, "from Sewer's End, near Saffron Walden, in Essex," which was brought, along with many other specimens, to the Linnean Society, for distribution to the members. The person who brought those specimens, had also brought thither several other highly suspicious plants, equally asserted to have been found wild in the same county. At some future day, perhaps, it may be well for botanists to have a hint on the value of some of that person's specimens, doubtless also preserved in other herbaria, in case they should hereafter be adduced as proofs of the nativity or old establishment of the species in England. Too much reliance has already been placed upon a solitary specimen or two of doubtfully British plants, preserved in old herbaria, without the true history of the specimen being known.

STIPA PENNATA, *Linn.*

Area [12].

Incognit. "Found by Dr. *Richardson*, in company with *Tho. Lawson*, on the Lime-stone Rocks hanging over a little valley, call'd *Long Sleadale*, about six Miles North of Kendale in Westmorland." (Dill. Raii Syn. 393). A conspicuous grass, very little likely to be found in the place indicated, and not again discovered since the time of Ray. Some mistake is to be presumed, although it cannot now be accounted for.

1307. AVENA FATUA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * (14 15 * * 18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Durham, Lancaster. (Shetland).
Estimate of provinces 11. Estimate of counties 50.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Colonist. Agrestal. Probably an agricultural introduction to Britain; that is, imported with foreign seeds of the cereals. Assuming the probability of this originally alien character, the question will then arise, whether the plant has now become sufficiently established to be held a "colonist" throughout the island, or only over a portion? It may be deemed a well established agrestal weed in the southern provinces; but hardly more than an

alien, renewed by repeated introduction, in the northern provinces. The counties or provinces in which we should draw the line of separation between its character of 'colonist' and 'alien', must be conventional choice only. In a letter dated May 9, 1844, the late Mr. Thomas Edmondston replied to my query, that the Avena fatua was "perfectly indigenous in Shetland." In his published Flora, the following year, he describes it as found in "cornfields, rather local"; but where did it grow in those isles when no corn was cultivated there? Mr. J. T. Syme designates it "a troublesome weed" in Orkney. Doubtfully native of Moray (Coll. Mor.). Abundant in cornfields about Aberdeen (Flo. Abred.). Doubtfully native in Kincardine (Mr. J. T. Syme). Absent from Forfar (Flo. Forf.); and equally so from the Glasgow and Edinburgh circuits (Flo. Glott. and B. S. Ed. Cat.). Found about Jedburgh (Duncan, Cat.), and Berwick on Tweed (Flo. Berw.). Altogether it would still seem to be very partial, or even local only, in Scotland. In several parts of Durham, Yorkshire, and South Lancashire (Floras).

1308. AVENA STRIGOSA, *Schreb.*

Area (1 2 3 * 5 * 7 8 9 10 11 * 13 14 15 16 17 18).

Alien. The local or distributive census of this species is the converse of that of A. fatua. The present one is rare in England generally, and very seldom found in the southern provinces, except as a few stray specimens among the sown crops of Avena sativa or of wheat; while in Scotland it is decidedly more frequent, kept up by direct cultivation of it to some extent still in the Highlands or Isles. In England, if not in Britain generally, the Avena sativa has more title to be deemed a naturalized species, than has the A. strigosa. And yet, curiously enough, the

authors of our general Floras of Britain, even up to the latest editions, still represent the A. strigosa as a genuine native; and Professor Henslow does so likewise in his Catalogue of British Plants. In the British Flora it is roundly stated to be "common both in England and Scotland"; and yet I should not be surprised to learn, that neither Author nor Editor had ever seen a living example of A. strigosa in England. It is mentioned in few of the local Floras and Catalogues of plants for English counties or sections of counties; and when mentioned in the superior works of that class, there is almost always some expression of doubt or denial of its true nativity. Witness, the Flora of Hertfordshire by the Reverends Webb and Coleman, the Catalogue of Hampshire plants by Dr. Bromfield, the Catalogue of Sussex plants by Mr. Borrer. During a residence of seventeen years in North Surrey, and many searches for this same species in its fields, I have found only three examples of it, and evidently introduced. The provinces in which it has been recorded or reported are mentioned above in the line of area; but it has probably acquired no permanent and self-sustaining locality in any of them.

1309. AVENA PRATENSIS, *Linn.*
1309, b. AVENA ALPINA, *Sm.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15 16 17.
South limit in Devon, Isle of Wight, Kent.
North limit in Ross, Aberdeen, West Inverness.
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.

Ascends to 700 or 800 yards, in East Highlands.

Range of mean annual temperature 51—39.

Native. Pascual, Rupestral. Not a very common grass, although widely distributed, and far from rare. In extreme cases the mountain form, called A. alpina, does look different from the plant of the dry and warm pasture grounds of the south of England; but the two are connected by so many intermediate and gradual links, equally as by the want of good distinctive characters, that they are now re-united by almost general consent.

AVENA PLANICULMIS, *Schrad.*

Area [15 16].

Incognit. The name of this species was applied to a plant which was cultivated in the Botanic Garden at Glasgow, and which Mr. Stuart Murray believed that he had originally brought from "Glen Sannox, on the ascent of Goat-fell, from Loch Rannoch, in the isle of Arran". The species has been since unsuccessfully searched for in the locality indicated, and particularly by Dr. Balfour in the summer of 1842. So large and conspicuous a plant was not likely to be overlooked when sought for; and we are thus led to suppose some mistake made about the origin of the root in the Glasgow garden. Mr. Babington (Manual) meets the difficulty of the case by sinking A. planiculmis into a variety of A. pratensis; a course from which I infer that he has not seen the real A. planiculmis of the gardens; sufficiently well represented, however, in the Supplement to English Botany, to which he refers. Unfortunately, Dr. Balfour has omitted to mention whether he found A. pratensis or A. pubescens in Glen Sannox; as the certainty of either of those species growing

there might suggest a partial explanation; although it would not explain how the A. planiculmis came to stand in the place of A. pratensis or pubescens in the garden. Errors are constantly arising in large collections by the transposition of labels, or by the death of one species and the appearance of another in its place from seeds accidently reaching that precise spot.

1310. AVENA PUBESCENS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Ross.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in the East Highlands.
Range of mean annual temperature 52—42.

Native. Pascual, Rupestral. Probably rare above the agrarian region; and apparently much less frequent than A. pratensis in Scotland generally. I possess a specimen from Orkney, and the Rev. Churchill Babington reported it to me as found by himself at Lubcroy in Ross-shire. I have seen examples of it labelled and distributed as the A. alpina by a well-known Scottish botanist.

1311. AVENA FLAVESCENS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen, Forfar, Stirling.

Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pascual. Apparently scarce in Scotland. Enumerated among the plants of Orkney in Lowe's list; but not seen there by other botanists. Proceeding southwards, the next mention of the species occurs in the Moray Flora, as being found on "Westerton lawn, certainly introduced." Professor G. Dickie informed me that it had been found in Aberdeen. Miss Boswell has seen it in Kincardine. In the Flora of Forfarshire, it is given only on the old and unconfirmed authority of G. Don. I picked it on the rock of Stirling Castle, and have also seen it about Edinburgh; where it should be common, as the name is marked with the highest sign of frequency in the Edinburgh Society's Catalogue. Not recorded for any county in the west of Scotland. Only very locally, and shortly exceeding the latitudinal parallel of 57, as an allowed native.

1312. ARRHENATHERUM AVENACEUM, *Beauv.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 450 yards, in East Highlands.

Range of mean annual temperature 52—42.

Native. Pascual, Septal. Remains unrecorded from 12 English and 5 Scottish counties; in all of which it may doubtless be found, if looked for.

1313. HOLCUS LANATUS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 500 yards, in East Highlands.

Range of mean annual temperature 52—41.

Native. Pratal, Sylvestral, &c. Perhaps without exception the commonest of the British grasses, or one that would be so if the land were left in a state of nature, instead of being converted into ploughed fields and artificial meadows.

1314. HOLCUS MOLLIS, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Hebrides, Ross.

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—61. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 350 yards, in East Highlands.

Range of mean annual temperature 52—44.

Native. Sylvestral, Pratal. Either decidedly less abundant than H. lanatus, or overlooked as that species. Absent from the Orkney lists, and from those (imperfect lists) made in Sutherland and Caithness, North Argyle and West Inverness. A single locality is given in the Flora of Shetland; and one only in the Catalogue for the Hebrides. Three localities, with an "&c.", are mentioned in the Moray Flora; and the name is marked in Mr. Gordon's List for Ross-shire. Proceeding southwards, it becomes more frequent, or else more frequently observed and recorded.

1315. TRIODIA DECUMBENS, *Beauv.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 550 or 600 yards, in East Highlands.

Range of mean annual temperature 52—41.

Native. Pascual, Ericetal. Rather a frequent grass in the Highland pastures, and still called "frequent" even so far north as Shetland, but it is wanting in the Faroe list.

1316. KOELERIA CRISTATA, *Pers.*

Area 1 2 3 4 5 * 7 8 * 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Sutherland, Ross.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands.
Range of mean annual temperature 52—42.

Native. Pascual, Glareal. Widely but rather unequally distributed; so that it seems a rare plant to some botanists, and a common one to others, according to their local habitations or wanderings. The provinces of South Wales and Mersey will both probably be filled in for this grass ere long; but that of the North Isles may still remain a vacancy, to keep the provincial estimate below the highest number.

1317. MELICA UNIFLORA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Kincardine. [Shetland?]
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58 [61]. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 or 200 yards, in East Highlands.
Range of mean annual temperature 52—45.

Native. Sylvestral. Frequent in England; much less so in Scotland, and apparently quite partially distributed there. I am not aware of any recorded locality for it in the West or North Highlands; nor is it included in the lists for Orkney or Hebrides. But still farther northward, in Shetland, one or two localities are given in words that leave the number of distinct stations uncertain; namely, "Burn of Sunda banks, near Scalloway." Perhaps there should have been a stop after "Sunda," to separate it from "banks"; and if so, there would seem to be two or more stations in Shetland. But this far outlying habitat, on a single juvenile authority, cannot very safely be trusted, unless it shall be directly verified, by another botanist, or indirectly confirmed by the discovery of the plant elsewhere in the North Isles or North Highlands. Still, some of the stations in the East Highlands seem to be in a climate scarcely superior to that of Shetland; for example, the "Falls of Lawers"; thus reducing the objection to one of distance and isolation only. The two British grasses that would seem most likely to be mistaken for Melica uniflora by a juvenile botanist, are Melica nutans and Briza media, neither of them included in the Flora of Shetland; but either of them as likely to be found in those islands, if it were a question of anticipation only, and the answer were to be founded on their geographical areas.

1318. Melica nutans, *Linn.*

Area [1 2 3 4] 5 * [7] 8 [9] 10 11 12 13 14 15 16 17.
South limit in Monmouth, Nottingham.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 10. Estimate of counties 25.

Latitude 51—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 450 yards, in East Highlands.
Range of mean annual temperature 48—42.

Native. Sylvestral, Rupestral. Doubtless several of the stations on record for M. nutans, if investigated, would be found to belong to M. uniflora only; and possibly some of the more boreal localities for the latter species, should have been indicated for the former. I have seen no example of the present species from provinces 1, 2, 3, 4, 7, 9, 16, which are given in the area only on old or much suspected authority; that of Lightfoot for 16, though old and unconfirmed, is too good to be excluded. There is no antecedent improbability against 7 and 9, North Wales and Mersey, given on the authority of Mr. Griffith and Mr. Bradbury, in the Botanist's Guide; but the former union of the two species, and frequent misapplications of their names since, suggest the necessity of more than the usual caution or scepticism in stating here the area and range of this species.

1319. MOLINIA CÆRULEA, *Mœnch.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 950 yards, in East Highlands.
Range of mean annual temperature 52—37.

Native. Ericetal. Decidedly a common grass; but being banished from large spaces in England, through the operations of farming, it appears to some botanists almost in the character of a rarity. M. depauperata seems to be an abnormal condition of the species, rather than a clearly marked variety; though its specific distinctness is still defended by some few botanists, or was so to a recent date.

1320. CATABROSA AQUATICA, *Presl.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Dorset, Isle of Wight, Sussex, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—45.

Native. Paludal. Few plants with so wide an area as the present grass, are at the same time so thinly scattered through Britain. The total number of counties in which stations are on record scarcely exceeds 50; and it may be that the estimate of 70 is somewhat too high, while that of 60 might be as much too low. Connected probably with that sparseness of distribution, or infrequency of repetition in its area, there exists a peculiarity towards each extremity of the island; namely, in the apparent absence of the species from the North Highland province, although recorded to grow in each of the three groups of the North Isles; and also its absence from Cornwall and Devon taken together. Since publication of the Flora Devoniensis, indeed, our information about the botany of

these two counties has been much augmented, and now exists scattered through so many books, lists, and periodicals, that it becomes somewhat riskful of error, to state that no record of the species in either county is in existence. In this, as in other such instances, my statement to that effect is to be received as implying only that I find no such record referred to in my own ample collection of notes,—no doubt far the most ample compilation of notes on the subject ever brought together, but still neither entirely complete, nor free from intermingled errors and oversights. I probably reckon quite within the true number, in estimating these notes to comprehend 500,000 localities.

1321. GLYCERIA AQUATICA, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Devon, Dorset, Sussex, Kent.
North limit in Moray, Aberdeen.
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—58. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Paludal. By its long area, extending from Devon and Kent northward to Moray, this might seem to belong to the British type of distribution; but by its census,—its frequency in England, rarity in Scotland,—it is approximated more to the English type. According to the Catalogue issued by the Botanical Society of Edinburgh, indeed, this species is placed in the same class of frequency with Glyceria fluitans. My recollection does

not accord therewith; but if such be the case in the sixteen-mile radius of the Edinburgh circuit, it is a solitary and remarkable exception. The species is omitted from the Flora of Moray, and only a single locality is given in that of Aberdeen. But in Murray's Northern Flora, two Moray localities are recorded on the authority of Mr. Stables, and one locality in Aberdeenshire, suspected to be artificial. My herbarium has specimens from Forfar, Perth, Edinburgh, Lanark, and counties to the southward of these.

1322. GLYCERIA FLUITANS, *Br.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 500 yards, or upwards, in East Highlands.

Range of mean annual temperature 52—41.

Native. Paludal. Professor Dickie reports this grass up to 2200 feet in Aberdeenshire; which is not improbable, though I have not myself found it within 650 feet of that altitude. I am at a loss whether the Glyceria hybrida or pedicillata (Townsend) should be placed under this species, or under its too close ally G. plicata: Mr. Babington refers it to the latter.

1322*. GLYCERIA PLICATA, *Fr.*

Area 1 2 3 4 5 * 7 8 * * 11 * * * * * * 18.
South limit in Somerset, Sussex, Kent.
North limit in Orkney.
Estimate of provinces 18 ? Estimate of counties 80 ?
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula ?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—46.

Native. Paludal. Only of late separated from G. fluitans, its area and census being in consequence very imperfectly known at present. It is recorded or known in Somerset (Rev. W. H. Coleman), North Hants (H. C. Watson), Sussex (Mr. Borrer), Kent (Mr. Thomas Sansom !), Surrey (H. C. Watson), Hertford (Rev. W. H. Coleman), Cambridge (Rev. R. C. Douglas !), Gloucester (Mr. F. J. A. Hort), Stafford (Rev. R. C. Douglas !), Flint (H. C. Watson), Leicester (Miss Kirby), Lincoln (H. C. Watson), Durham (Mr. Hort), Orkney (Mr. J. T. Syme); perhaps with some other counties also. These counties suffice to show an area which embraces almost the whole length and breadth of Britain, but with very large interspaces between the stations ascertained; so that the provincial and comital estimates are only rough guesses.

1323. GLYCERIA MARITIMA, *M. & K.*

Area 1 2 3 4 5 6 7 * 9 10 11 * 13 14 15 16 17 18.
South limit in Devon, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 50.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to the North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. Probably to be found all around the coast line of Britain at short intervals; although the imperfectly examined coast line of the Lake and Ouse provinces may appear exceptions by existing records. The North Highland province might have been a third seeming exception, but for the locality of Loch Broom, recorded by Lightfoot.

1324. GLYCERIA DISTANS, *Wahl.*
1324, b. GLYCERIA BORRERI, *E. B. S.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * * 15.
South limit in Devon, Isle of Wight, Kent.
North limit in Forfar, Fife, Lancaster.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 yards, less or more, in England.
Range of mean annual temperature 52—47.

Native. Sub-littoral, Paludal. Not entirely limited to the coast line, although its stations are mostly on the shore or in the immediate vicinity of the sea. G. Borreri may perhaps have characters sufficient to warrant its separation as a species from G. distans, although I do not feel at all well convinced thereof; it may be because I

have not seen the plant growing. The G. Borreri is reported to occur in the Isle of Wight, mainland Hants, Sussex, and Essex.

1325. GLYCERIA PROCUMBENS, *Sm.*

Area 1 2 3 4 5 6 * * 9 10 11 * * * [15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Northumberland, Lancaster. [Forfar?]
Estimate of provinces 11. Estimate of counties 25.
Latitude 50—55 [57]. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Channel.
Ascends, at the sea level, to Tyne.
Range of mean annual temperature 52—48.

Native. Littoral. At present, this species can be considered certainly known in eight provinces only; those of South Wales (Tenby Flora) and Forfar (Flora Forf.) may be correct enough, but require verification. The species being found in the provinces of the Peninsula and Severn (neighbourhood of Bristol; Mr. Thwaites), and also in that of Mersey, there would seem a presumption in favour of its occurrence on the coast both of South and of North Wales. The county of Forfar is supported by two witnesses for different localities, George Don and Mr. A. Kerr; and were it not so far beyond the northern limit of the species in Britain, as otherwise known, that county might have passed here unchallenged. The want of good local Floras for Scotland, planned and written under any views of science higher than those entertained by the mere botanical collector, is a great inconvenience to the botanical geographer. Between Northumberland and Moray, we have only Floras and Catalogues indited for the

collector rather than the philosophic botanist. There is, of course, nothing censurable in this fact; but the want of publications of wider scope and worth is not the less to be regretted.

1326. GLYCERIA RIGIDA, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Forfar, ——— ?
Estimate of provinces 14. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Glareal. It will be seen by the line of area that there is no locality yet ascertained for this rather frequent English grass, to the northward of Lancashire, on the west side of the island. The Lake and West Lowland provinces, however, would seem not unlikely to produce it.

1327. GLYCERIA LOLIACEA, *Lond. Cat.*

Area 1 2 3 4 * 6 7 * 9 10 11 [12] 13 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Fife, Wigton. [Forfar ?]
Estimate of provinces 12. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.

Ascends, at the sea level, to East Highlands.

Range of mean annual temperature 52—48.

Native. Littoral. Interruptedly scattered along the coasts of England, and still more local in Scotland. The Lake province is far from an unlikely habitat; but it is excluded above because the only station for it on record appears to be that of the Botanist's Guide, on the authority of the Rev. J. Dodd, who is reported to have found the plant "in barley crops"; from which, it may be supposed, that Mr. Dodd intended some other species of grass. In Forfarshire, according to George Don in Hooker's Flora Scotica, but omitted from Gardiner's Flora of the county, though its certain occurrence on the coast of Fife lends that degree of countenance to Don's habitat, which might be held an indirect confirmation of it, if he were not the witness to so many other unverified and much-more-to-be-suspected localities. For the North Isles, there is only the authority of Lowe's Orkney list.

1328. POA ANNUA, *Linn.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Superarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 1100 yards, in East Highlands.

Range of mean annual temperature 52—36.

Native. Agrestal, &c. Of all our native plants this one is perhaps the most near to universal distribution in

Britain; in every province, county, and zone, and almost everywhere in abundance. Its frequency, however, diminishes much in the arctic region, and it fails to reach the summits of the loftiest mountains.

1329. Poa bulbosa, *Linn.*

Area [1] 2 3 4.
South limit in Isle of Wight, Sussex, Kent. [Devon ?]
North limit in Norfolk, Suffolk. [Somerset ?]
Estimate of provinces 3. Estimate of counties 6.
Latitude 50—53. Germanic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Channel.
Ascends, at the coast level, to Ouse.
Range of mean annual temperature 51—49.

Native. Littoral. Three or four of the eight counties recorded for this species may be held as doubtful, Specimens are preserved in my herbarium from the Isle of Wight (Dr. Bromfield), and Norfolk (Miss Bell; Mr. Fitt). The counties of Sussex (Mr. Borrer), and Suffolk (Mr. E. Forster) rest on good authority. Those of Devon (Rev. Dr. Beeke), Somerset (Mr. Dyer), Kent (Mr. Dillwyn), and Surrey (Hudson), it would be desirable to have verified by the better qualified botanists of the present day;—better qualified than the collecting contemporaries of Mr. Hudson or Dr. Smith, in consequence of the much increased facilities afforded by more correct manuals, cheap and pretty good figures, and the large distributions, and mutual exchanges of specimens, made of late.

1330. Poa alpina, *Linn.*

Area * * * * * * 7 * * 10 * 12 * * 15 16 17.
South limit in Caernarvon, York.
North limit in Sutherland.
Estimate of provinces 6. Estimate of counties 12.
Latitude 53—59. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 800 yards, or lower, in Humber.
Ascends to 1300 yards, in East Highlands.
Range of mean annual temperature 40—33.

Native. Rupestral. The Lake province rests still upon old records of the last century, that it would be well to replace by fresh observation, although the habitat is probable enough. The other provinces are sufficiently authenticated, and are represented in my herbarium through specimens collected by the hands of living botanists.

1331. Poa pratensis, *Linn.*
1331, b. Poa angustifolia, *Linn.?*
1331, c. Poa subcærulea, *Sm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 950 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—37.

Native. Pratal, Pascual, &c. I have no note of seeing this above 750 yards. Dr. Dickie reports it so high as 2900 feet in Aberdeenshire; and his higher measurement is here adopted. As for the two sub-species, carved off P. pratensis, it is difficult to separate them as varieties only by well defined characters; and hence no attempt is here made to treat their distribution apart from that of the species in the aggregate.

1332. Poa trivialis, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 800 or 850 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Pratal, Sylvestral, &c. One of the plants before alluded to (Cybele, vol. ii. p. 369) as growing with Urtica dioica and Stellaria media, high on the Breadalbane mountains; but elsewhere not observed by myself above 700 yards of altitude. As with various other lowland grasses, however, the uppermost limits of this one may be readily overlooked on the exposed sheep-pastures of the mountains, where the plants are prevented from flowering freely, by the nibbling of the sheep and the violence of the winds.

1333. POA COMPRESSA, *Linn.*
1334, f. POA POLYNODA, "*Parn.*"

Area 1 2 3 4 5 6 7 8 * 10 11 12 13 14 15 * * [18].
South limit in Devon, Isle of Wight, Kent.
North limit in Forfar, Edinburgh, Lanark.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Glareal, Rupestral. For the four most northerly provinces I am aware of only two habitats on record; namely, "not uncommon" in Forfarshire (Gardiner's Flora), and "common" in Shetland (Edmondston's Flora). As P. compressa attains nearly or quite to a corresponding latitude on the Continent of Europe, the Shetland habitat may perhaps be correct; but while the same species remains unknown in the wide interspace between Forfarshire and those boreal isles, there seems sufficient ground for distrusting the accuracy of the Author of the Shetland Flora in this instance. Whether P. polynoda be a distinct species from P. compressa, or not, it is impossible at this time to distinguish between their localities, so long recorded under the one name only. And their alleged characters are unsatisfactory. Every botanist who is accustomed to watch the growth of plants, must be aware that the length of internodes, and the distance of the highest knot from the inflorescence, is often much varied according to the humidity of the soil and atmosphere during the period of growth. The difference of 3 or 5

nerves in the pales or glumes of grasses, I suspect to be a fallacious character. And a little more or less web, its presence or absence, is worthless as a character for distinction. P. polynoda has been recorded from Somerset, Sussex, Hertford, Gloucester, Westmoreland, and Edinburgh.

1334. POA NEMORALIS, *Linn.*
1334, c. POA PARNELLII, *Bab.*
1334, d. POA MONTANA, "*Parn.*"

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Devon, Dorset, Sussex, Kent.
North limit in Moray, Aberdeen, Dumbarton.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1000 yards, more or less, in E. Highlands.
Range of mean annual temperature 51—37.

Native. Sylvestral, Rupestral. The upper limit of this species (or as some may have it, aggregate of species) must be considered very unsatisfactorily determined. According to Dr. Greville (Mab. Man. edit. 2) P. montana occurs at 3600 feet on Ben Lawers; but statements of this kind, made by individuals not accustomed to measure and estimate altitudes, can seldom be received with implicit reliance, and are usually intended only as general approximations. It may be observed here, that I take the botanical doings of Dr. Parnell only as they have been adopted by other and better authorities, and never at the first-hand. For this unusual course a reason could be adduced which I am unwilling to print, although not

enjoying any great credit for being too backward in stating unwelcome facts or unpleasing opinions.

1334, e. POA BALFOURII, "*Parn.*"

Area * * * * * * 7 * * 10 11 * * * 15 16.
South limit in Caernarvon, York.
North limit in Dumbarton, Perth, Forfar.
Estimate of provinces 5. Estimate of counties 6.
Latitude 53—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, or lower.
Ascends to 1000 yards, more or less.
Range of mean annual temperature, say 40—37.

Native. Rupestral. A doubtful species, resembling both P. cæsia and P. Parnellii. Appearing to pass gradually and more completely into the former, through wild specimens from the counties of Perth and Forfar, while a difference is still obvious to the eye, between Balfourii and Parnellii, cultivated together in an English garden, although it is a difference not readily to be described, in technical language. I cannot concur with Messrs. Hooker and Arnott in aggregating together, under name of P. nemoralis, all the mountain grasses called severally P. montana, Parnellii, Balfourii, cæsia, and glauca; but I do fear they have been too much separated by Mr. Babington, on slight and inconstant characters. To the above five counties, that of Northumberlond is to be added for P. Balfourii, and perhaps that of Aberdeen likewise.

1334, a. POA CÆSIA, *Sm.*
1334, b. POA GLAUCA, *Sm.*

Area * * * * * * 7 * * 10 * * * * 15 16.
South limit in Caernarvon, York.
North limit in Aberdeen, Forfar, Perth, Argyle.
Estimate of provinces 4. Estimate of counties 6.
Latitude 53—58. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, perhaps lower.
Ascends to 1000 yards, more or less.
Range of mean annual temperature, say 40—37.

Native. Rupestral. The name "P. glauca" having been occasionally applied to a glaucous state of P. pratensis, found in the south of England and probably elsewhere, might give rise to erroneous ideas of the area and range of the mountain plant equally so designated. Reference may be made to the preceding species, P. Balfourii, for remarks on this present one. Though treated apart here, it will be necessary to sink the one under the other in an after part of this work, where tabular or statistical results will be rendered, and in which fragmentary distribution would be found highly inconvenient.

1334, g. POA MINOR, "*Gaud.*"
("P. flexuosa, *Eng. Bot.*")

Area * * * * * * * * * * * * * * 15 16.
South limit in Forfar?
North limit in West Inverness, Aberdeen.
Estimate of provinces 2. Estimate of counties 3.

Latitude 56—58. Highland type of distribution.
Arctic region. Superarctic zone.
Decends to 1000 yards, less or more.
Ascends to 1200 yards, more or less.
Range of mean annual temperature, say 37—34.

Native. Rupestral. On Ben Nevis, Inverness-shire, and on Lochnagar, Aberdeenshire, according to Babington's Manual. Besides these two counties, also said to be found in that of Forfar; some remarks in reference to this latter habitat being made under the next species; as well as in reference to their altitudes, &c.

1334, h. POA LAXA, "*Haenk.*"

Area * * * * * * * * * * * * * * * 15 16.
South limit in Forfar?
North limit in West Inverness, Aberdeen.
Estimate of provinces 2. Estimate of counties 3.
Latitude 56—58. Highland type of distribution.
Arctic region. Superarctic zone.
Descends to 1000 yards, less or more.
Ascends to 1200 yards, more or less.
Range of mean annual temperature, say 37—34.

Native. Rupestral. On Ben Nevis, Inverness-shire, and on Lochnagar, Aberdeenshire, according to Babington's Manual. Also, on the mountains of Clova, according to half a dozen witnesses, whose names are cited in Gardiner's Flora of Forfarshire, &c.,—"Hooker, Greville, Burchell, Drummond, Don, Balfour." The five first names may now be put down among old authorities of little value when the question is, whether the Clova mountain habitat belongs to P. laxa or to P. minor. But the last one is a recent authority, and is adduced appa-

rently in witness of both alleged species being found there: "*P. laxa*, Hænk.—Glen Dole, Aug. 1846, with var. *flexuosa*, Parn., *Prof. Balfour*." This would appear conclusive and satisfactory, if we could rely on the Professor's exactness. But without seeking to undervalue Professor Balfour's general knowledge of botany, and perfect competence to teach general and elementary botany to students, I confess to have little or no reliance on his accuracy in naming or distinguishing what are called "critical species." Nor do I think that the Authors of the British Flora, or the Author of the Manual of British Botany, or any other real authority in British botany, will venture publicly to express a greater amount of trust in Dr. Balfour's authority in this peculiar respect. Indeed, it may be inferred from the omission of the alleged Clova locality in the Manual of British Botany (1851) that its Author does not rely upon Dr. Balfour's report of 1846. For the present therefore, the county of Forfar is held to be questionable, as a habitat for either species, without being deemed improbable in itself, or absolutely rejected in the estimate of counties. Professor Arnott unites the two supposed species; while Mr. Babington separates them. My own examples, all from Lochnagar, are in two opposite conditions, which most materially interferes with proper comparison; P. laxa being viviparous only, and P. minor being in its normal state. So far as may be judged under these non-comparable conditions, the plants look distinct. But if distinct, the figure in English Botany (127, small edition) would seem to represent the normal or non-viviparous state of P. laxa, not of P. minor, under which latter it is doubtfully quoted (1123, first edition) by Mr. Babington. The range of altitude and of temperature for each species, is given on a merely rough guess in the formula. The higher altitude indicated

is probably very near truth; but how far below that altitude either species has been found, I am unprepared to say. In bygone years I had received P. laxa under name of P. alpina, from Scottish botanists, and kept it as such in my herbarium until quite recently; its viviparous condition perhaps tending to prevent any very close examination into the accuracy of the labelling.

1335. BRIZA MEDIA, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Ross.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 600 or 650 yards, in East Highlands
Range of mean annual temperature 52—40.

·· Native. Pratal. Apparently scarce above the agrarian region, and in the three most northern and north-western provinces. It was included in Lowe's Orkney list, and has been also seen in the same isles by Mr. J. T. Syme, who thought it might have been introduced. As an authority for the North Highlands, the name is marked in the checked catalogue of Ross-shire plants, received from the Rev. George Gordon. For the West Highlands, I am not prepared to adduce any more certain authority than the Flora Glottiana, in which B. media is said to occur "occasionally"; and as that Flora enumerates the "indigenous plants on the banks of the Clyde, and in the neighbourhood of Glasgow", such a qualified general indication cannot certainly imply the existence of B. media

northward of the town and river, that is, in the West Highland province; especially as the three localities expressly mentioned appear to be all within the West Lowland province. I have seen this grass at Callander and Killin, quite on the western side of the East Highland province.

1336. BRIZA MINOR, *Linn.*

Area 1 2 [3 * 5 * * * 9].
South limit in Cornwall, Devon, Dorset, Isle of Wight.
North limit in Hants. [Somerset?]
Estimate of provinces 2. Estimate of counties 4.
Latitude 50—51. Atlantic type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, more or less, in England.
Range of mean annual temperature 52—51.

Native. Agrestal. The authorities for the alleged habitats in the provinces of Thames, Severn, Mersey, may be traced through the New Botanist's Guide. The four counties above mentioned can alone be considered certain habitats for this species. It is confidently referred by Dr. Bromfield to the Atlantic type, as one "than which few species are more characteristic of the occidental flora" (Phytologist, iii. 1112). This is not strictly correct though nearly so, because the species ranges along the southern coast, from Cornwall eastward to Hants, but does not pass up the western coast, so far as is yet certainly ascertained, either to Wales or to the south side of the Bristol Channel. Thus, its extension a little farther eastward, into Sussex and Kent, would have rendered its area an example of the austral (English) rather than the

occidental (Atlantic) type; so gradually do these distinctive types pass into each other, although they have a real and obvious distinction under any broad and general view of the distribution of our indigenous plants.

1337. CYNOSURUS CRISTATUS, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pascual. A very common grass throughout Britain, excepting in the upper zones on the mountains and moors. Perhaps it might be correctly assigned to the inferarctic zone, although I have only once met with it above 450 yards; and in that one spot, on the south-eastern declivity of Ben Lawers, it was observed at 1600 feet by estimate, not exact measurement. As one example of the difference to be understood between these two terms, so frequently used in this work, I will explain the signification of '1600 feet by estimate', in the present instance. In descending Ben Lawers towards Loch Tay I observed Luzula spicata, Epilobium alpinum, Gnaphalium supinum, on the gravelly side of a stream; and as this spot appeared to be a low station for those plants, I was induced to stop there awhile in order to note down the indications of the sympiesometer. Continuing the descent thence to the first plants of Pteris aquilina, I

again stopped and repeated the process; having successively set down the names of the following plants in the order of first seeing them between the two points of rest, Triodia decumbens, Pedicularis sylvatica, Pedicularis palustris, Cynosurus cristatus, Carex binervis, Carex pilulifera, Linum catharticum, Carduus palustris, Pteris aquilina. On afterwards calculating the altitude of the two stations (Luzula spicata and Pteris aquilina) I found them to be 1800 and 1400 feet. And as the name of Cynosurus cristatus was entered in my note-book in the middle of the short list of plants noted between those two altitudes, I assumed the height of the grass to be about 1600 feet; it might be rather more or rather less, and is called 500 yards (1500 feet) in the formula, in order to be on the safer side, below rather than above the extreme height for an ascending species. But if the Luzula spicata had been again seen with the Cynosurus, I should have reckoned the height of the rush at 550 yards (1650 feet), and not 500 yards; because that was a descending species, and any chance of mis-estimate should be kept within the actual range. It will be borne in mind here that no narrower steps of altitude than 50 yards are used in this work.

1338. CYNOSURUS ECHINATUS, *Linn.*

Area (1 2 3) * * * * [8 9 10 11 * * * * * * 18].

Alien in Britain. Native Sarnian. Occasionally introduced into Britain with agricultural seeds, or in ballast; but usually soon disappearing again from any spot in which it may be found; so that it can scarcely be admitted among British plants in any sense of the term, even extended so as to include the semi-naturalized

species. Two instances afforded by this grass may be cited here, in illustration of the little reliance to be placed on records of new discoveries by thoughtless observers or by unfaithful reporters. In the Phytologist, vol. i. p. 773, Mr. Samuel Gibson reported C. echinatus, as having been found by himself, among other rare plants, in the Vale of Calder, Yorkshire; but no hint or suggestion was added, by which a reader could be led to infer that the grass existed there only as a casual straggler in extremely small quantity. Fortunately a request from Mr. Edmondston and the Editor of the Phytologist, for specimens of it from Mr. Gibson's locality, elicited the admission that only three specimens had been found by S. Gibson. So again, perhaps with more of youthful thoughtlessness than of bad faith, a record was published to the effect that Mr. Edmondston had discovered this grass "on a barren moor in one of the Shetland Isles", in the year 1840. In the Phytologist for 1843 (i. p. 772) Mr. E. informed botanists that he had in that year "re-found Cynosurus echinatus in Bressa, Shetland, about a hundred yards from where I found it in 1840. I obtained" he continues, "*only three small specimens;* but this fact proves the *perseverance of the plant in the locality,* and shows the *propriety of reckoning it in the Scottish Flora.*" Could any conclusion well be more inconsequential! Especially too, when we find in the Flora of Shetland by the same writer, that only *eight* specimens of this *austral* and *annual* grass were found in 1840. Suppose the case of these two botanists having died without having been induced to publish any more correct account than they had first promulgated; in that case, the three Yorkshire specimens and the eight Shetland specimens might have caused their chance stations to remain many years in our compilations of localities, as if productive of an indefinite

quantity of a species, which its two discoverers had seen no grounds for supposing to be of foreign and accidental origin in those stations. Thus do so many errors arise, and become perpetuated, in reference to the existence or nativity of species in Britain. The morbid and faithless vanity, which at times prompts to these treacherous and deceptive records, well deserves to be unsparingly exposed and condemned.

1339. DACTYLIS GLOMERATA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 450 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—42.

Native. Pratal. The highest points at which I have myself noted this common grass in the Highlands, were at and about 1100 feet, in different stations in Perth and Aberdeen. Professor Dickie records it so high as 1386 in the latter county.

1340. FESTUCA UNIGLUMIS, *Sol.*

Area 1 2 3 4 * 6 7 * 9.
South limit in Devon, Isle of Wight, Kent.
North limit in Lancaster, Anglesea, Suffolk.
Estimate of provinces 7. Estimate of counties 15.

Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the coast level, to Mersey.
Range of mean annual temperature 52—49.

Native. Littoral. Approximating to the Atlantic type, by its greater frequency and higher latitude on the western side of England. In addition to the counties above mentioned it occurs in Essex and Kent, on the eastern side of England, in Cheshire, Glamorgan, Caermarthen, Somerset, on the western side, and in Dorset, Hants, Sussex, on the southern coast.

1341. FESTUCA BROMOIDES, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle (Islay).
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Glareal, &c. Frequent in England; much less so in Scotland; chiefly or only near the coast in the Highland provinces. Mr. Syme found it near Swanbister, in Orkney; but thought it might have been introduced to that locality. And that being the only station reported to the northward of Ross-shire, it has appeared better not to enter the species as general in the provinces of Britain; but to consider the North Isles as beyond the truly indigenous limits of the species; which appears also to be

quite absent from Scandinavia, excluding Denmark, where it is a local and southern species.

1341, b. FESTUCA PSEUDO-MYURUS, "*Soy.-Will.*"

Area 1 2 3 4 5 6 7 [8] 9 [10 11 * 13 14 15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Cheshire, Norfolk. [Forfar, Glasgow.]
Estimate of provinces 8. Estimate of counties 30.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—49.

Native. Glareal, Rupestral. A difficult species, too closely resembling F. bromoides; to which latter several of its recorded stations very likely belong. I have seen specimens only in or from Surrey, Suffolk, Norfolk, Gloucester, Hereford. According to Mr. George Don and Dr. Walker Arnott (Flora Scotica, 1821) it grows even so far north as Forfarshire; which is improbable, unless the F. pseudo-Myurus be truly a variety of F. bromoides; on which latter supposition the variety may perhaps occur in any county where the typical form will thrive. In one attendant circumstance or other, however, I find grounds to think that all the Scottish stations, and most or all of those in the northern provinces of England, have been recorded erroneously, through applying the name of Myurus to F. bromoides. Principally or more frequently on walls, which make an artificial site of an intermediate character between 'glareal' and 'rupestral.'

1342. FESTUCA OVINA, *Linn.*

1342, e. FESTUCA TENUIFOLIA, *Sibth.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1400 or 1450 yards, in East Highlands.
Range of mean annual temperature 52—32.

Native. Pascual, &c. In giving the altitudinal and zonal range of this species, it is assumed that the viviparous Festuca, so frequent on the mountains of Scotland, is a state of F. ovina, rather than of F. duriuscula. The height of "1400 or 1450 yards" is intended for the summit of Ben-na-muic-dhu, which attains to 4300 feet, a little more or less.

1343. FESTUCA DURIUSCULA, *Linn.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 52—38.

Native. Pascual, &c. The name of Festuca duriuscula may be taken to signify a grass that is more or less intermediate in its characters between F. ovina and F. rubra. But these three names are differently applied by different botanists; so that almost inextricable confusion and uncertainty would attend any attempt to parcel out the stations among them in strict detail. Fortunately, for the immediate purpose here required, this speciality of detail is unnecessary; each of the species, real or supposed, appearing to occur throughout Britain, when the area is based on the provinces; while the comital distribution may be equally general, except for the littoral species, F. rubra. My own idea of F. duriuscula, is that of a plant not strictly cæspitose, but more shortly stoloniferous than F. rubra, with usually plane stem-leaves, growing chiefly in meadows and on hedge banks, and imperfectly distinguishable from F. ovina, by its more robust growth, larger panicles, and more awned pales; but withal passing so close towards, if not into, F. ovina, as often to be undistinguishable by any definite marks or satisfactory character.

1344. FESTUCA RUBRA, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in Channel.
Ascends, at the coast level, to North Isles.
Range of mean annual temperature 52—46.

Native. Littoral. An unsatisfactory species to the botanical geographer; the line of distinction between it and F. duriuscula being so ill-defined that stations of the latter are perhaps not unfrequently recorded for the present species. In indicating the area and census, I am almost compelled to assume that any creeping (stoloniferous) Festuca of the shores, whether found on dry sand or on tide-washed loam, is properly to be assigned to F. rubra.

1345. FESTUCA SYLVATICA, *Vill.*
1345, b. FESTUCA DECIDUA, *Sm.*

Area * 2 * * 5 * * * * 10 11 12 * 14 15 16.
South limit in Sussex, Wilts.
North limit in Moray, Perth, Dumbarton.
Estimate of provinces 8. Estimate of counties 15.
Latitude 50—58. Scottish (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel?
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. Very thinly scattered in proportion to the extent of its area in Britain, and apparently more prevalent in the northern provinces, than in the southern, although unknown in the extreme north. My specimens are all from northern counties; namely, from York, Edinburgh, Perth, Moray. But the authorities for the more southern counties appear ample; namely, for Sussex (Mr. Borrer), Wilts (Mr. T. B. Flower), Gloucester (Mr. F. J. A. Hort), Worcester (Midl. Flora, &c.), Stafford (Garner, N. H. S.).

1346. FESTUCA ARUNDINACEA, *Schreb.*
1346*. FESTUCA ELATIOR, *Aut.*

Area 1 2 3 4 5 * 7 8 9 10 11 * 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—44.

Native. Pratal, &c. Again it is to be feared that the geographical application of a name is here in part and unavoidably substituted for the real distribution of a species. I am quite in doubt whether the names "arundinacea, elatior, pratensis, loliacea" include three or two species. Assuming two species only, the names should be apportioned to them by pairs; "arundinacea and elatior" being one species, "pratensis and loliacea" being the other. Unfortunately this has by no means been the constant use of the names in books; that of "elatior" having been applied promiscuously to luxuriant states of F. pratensis and to another plant, which latter may or may not be a smaller state of the great F. arundinacea of the coast. In the London Catalogue, third edition, "arundinacea" intends the large coast plant, as yet known only in very few stations, while the name "elatior" applies to anything intermediate between the coast plant and certain "pratensis." In Babington's Manual, however, the name "F. arundinacea" intends both the coast and the intermediate forms,—anything which is not called "pratensis"

or "loliacea." As yet, the application of the two names "elatior" and "pratensis" is variable and hardly better than conventional, if we attempt to separate the smaller states of F. elatior from the larger states of F. pratensis. Nevertheless, I believe that there are at least two real species here; and that in contrasting the large states of the one with the large states of the other,—the small states of the one with the small states of the other, sufficient distinctions may usually be found. F. elatior (including arundinacea) is a decidedly larger grass, much harsher to the touch, with more ovate spikelets, closer flowers, longer awns, and other characters to assist in the diagnosis, which may be seen described in Babington's Manual, third edition.

1347. FESTUCA PRATENSIS, *Huds.*
1347, b. FESTUCA LOLIACEA, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17 18.
South limit in Devon, Isle of Wight, Kent.
North limit in Orkney, ——— ?
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, or upwards, in East Highlands.
Range of mean annual temperature 51—45.

Native. Pratal. The uncertainties which attend the distinction between this and the preceding species, F. elatior or arundinacea, have been mentioned under the latter. There still remains a sort of question about the specific identity or distinctness of F. pratensis and F.

loliacea. The diagnosis formerly attempted to be drawn, by contrasting the branched inflorescence (panicle) of F. pratensis against the simple inflorescence ("spiked raceme") of F. loliacea, is utterly useless; because every the most gradual step from the one form to the other, may be traced between them in many different localities; and I have seen the two forms of inflorescence distinctly characterized, along with intermediate and less decided links, on one single root. But against the evidence of identity derived from this transition of characters, it has been said that the outer glume of F. loliacea is 5-nerved, while that of F. pratensis is 3-nerved. Any supposed force in this sort of argument is met and neutralized by one of the intermediate links above mentioned, and now in my herbarium. Counting downwards from the top it has thirteen nearly sessile spikelets, on short simple pedicels, the fourteenth is represented by one similar almost sessile spikelet and a second elongated pedicel bearing two spikelets. The fifteenth, which is also the lowest, is again a single and shortly stalked spikelet. The glumes on the simple pedicels are *five*-nerved; on the branched pedicel they are *three*-nerved; that of the lowest solitary spikelet is spuriously 4-nerved, in consequence of one of the lateral nerves being almost obsolete. This individual specimen was taken from a wild root of F. loliacea transplanted into my garden, and which afterwards produced stems with both panicled and racemed inflorescence, simultaneously with the intermediate link thus particularly mentioned. Even on one of the racemed stems some glumes are 3-nerved, others 5-nerved.

1348. BROMUS GIGANTEUS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Sylvestral. There appears to be no printed record of this species in the Lake province; but I am indebted to Mr. F. J. A. Hort, for information that it does occur in Westmoreland and Cumberland; thus completing the uniform series of Nos. in the line of area, which would otherwise have been interrupted between 11 and 13. In the case of the next species also, and of several other plants, I have been under the same obligation to Mr. Hort, for enabling me to introduce the number of a province, which must have been left a void at present without the assistance of that well-informed botanist.

1349. BROMUS ASPER, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Banff, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Sylvestral. Frequently growing along with B. giganteus, and their names appear to be sometimes misapplied from one to the other, especially by botanists who use descriptive Floras or lists in which these two closely resembling grasses are placed under different genera,—Festuca and Bromus. Both alike fall short of attaining to the full area of the British type, by their absence from the two most northerly provinces, according to existing records.

1350. BROMUS STERILIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Moray, Aberdeen, Dumbarton.

Estimate of provinces 16. Estimate of counties 70.

Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Native. Glareal. In the Moray Flora this is marked as an uncertainly indigenous species; and it appears to be of so infrequent occurrence in the Highland provinces as to approximate nearly to the English type of distribution. I am not prepared to adduce any authority for its occurrence in the West Highland province; but in the Flora of Glasgow it is stated to be "frequent," and may thus be presumed to occur in Dumbarton as well as Lanark shire. In the Catalogue of the Edinburgh Botanical

Society it is marked with the highest sign of frequency for that neighbourhood, perhaps incorrectly so.

1351. BROMUS MADRITENSIS, *Linn.*

Area 1 2 3 * 5 6 * * * * [11 * * 14 15].
South limit in Devon, South Hants, South Kent.
North limit in Caermarthen, South Gloucester, —— ?
Estimate of provinces 5. Estimate of counties 10.
Latitude 50—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in the Peninsula.
Ascends to 50 yards, less or more, in England.
Range of mean annual temperature 51—49.

Native. Glareal. Like too many other plants, this one has been reported from stations which would give a far wider area and range than can be received here without verification by more recent or better authority. The counties of Devon (Mr. G. S. Gibson), Somerset (Mrs. Russell !), Hants (Dr. Bromfield), Kent (Rev. G. E. Smith), Gloucester (Mr. Thwaites !), Glamorgan (Mr. Gutch), Caermarthen (Mr. Motley), being sufficiently probable, and well or fairly testified to, may be admitted as correct. The species formerly grew near London (Mr. Borrer, &c.), and probably at Oxford; but whether still to be found in either habitat, I do not know. The following counties should be distrusted until verified; namely, Worcester (Dr. Stokes, &c.), Durham (Weighell's Herbarium, from ballast hills), Edinburgh (Dr. Arnott, in Hook. Scot. &c.), Fife (Rev. A. Robertson), Kinross (Brit. Flo. edit. 4). If ever found in Scotland, it would probably be as an introduced species only.

1352. Bromus maximus, *Desf.*

Sarnian. Allied to B. madritensis (the B. diandrus of Curtis), but hitherto found only in the Channel Islands, and not in the British Islands properly so called.

1353. Bromus erectus, *Huds.*

Area 1 2 3 4 5 [6] 7 8 * 10 * * (13) 14 15.
South limit in Dorset, Isle of Wight, Sussex, Kent.
North limit in Fife, Edinburgh, (Kirkcudbright?)
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—47.

Native. Pascual, Rupestral. Chiefly found in the south and east of England; very local in Wales and Scotland. I have seen specimens from Fife (Dr. Dewar) and Edinburgh (Mr. W. Brand). The authorities for the two Welsh provinces are single only; Falconer's Flora of Tenby, for South Wales; Davies's Welsh Botanology, or Anglesea Flora, for North Wales; and each of these may be deemed to require confirmation. Found in the neighbourhood of Dumfries, by Mr. Peter Gray; but whether in the county of Dumfries or in that of Kirkcudbright, or in both, does not quite clearly appear. It may be that "New Abbey Church-yard" (Gray, in Phytol. i. 417) is the only station in the West Lowland province; and if so, the station may have been artificial or accidental.

1354. BROMUS SECALINUS, *Linn.*
1354, b. BROMUS VELUTINUS, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Moray, Banff, Argyle.
Estimate of provinces 17. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Colonist. Agrestal. Found only in cultivated fields and occasionally by road-sides; being very uncertain and usually temporary in its stations. More frequent in the southern provinces of England; and probably kept up in those of Scotland, or at least in the Highland provinces, only by renewed introduction. For a species thus doubtful in its nativity and permanence, the area, the northern limit, the range of latitude, &c. must be conjecturally or arbitrarily decided upon. Two quite different plants have passed under the name of B. velutinus; one of them being a pubescent variety of B. secalinus; the other being a state of B. mollis, with close panicles and longer pubescence than usual, mostly of short stature, and chiefly found near the coast. This latter is the B. velutinus of Hooker and of the majority of botanical collectors in England. I have myself found the pubescent state of B. secalinus in Sussex only; and have never received a specimen of it collected by any other English botanist.

1355. BROMUS COMMUTATUS, *Schrad.*
(B. racemosus, *Bot. Ang.*)
(B. arvensis, *Bot. Scot.*)

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 70.
Latitude 50—58 (61). British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pratal, Agrestal. A much confused and misnamed species; greatly resembling B. mollis, but often to be distinguished at a glance, by its taller growth, longer pedicels, and slightly drooping or unilateral panicle; besides that B. mollis is usually pubescent, and B. commutatus non-pubescent, though the contrary varieties occur in each species. With very few exceptions all the British localities on record for so-called B. arvensis, belong to B. commutatus; and the larger number of those on record for so-called B. racemosus, may with equal correctness be transferred to the present species. It is enumerated among the plants of Shetland, by Edmondston; and if correctly named, the probability of its being an introduced species there would seem considerable. But as yet, we know its northern limit in this country very insufficiently. I observed it about Castletown-of-Braemar (350 yards) and Dalwhinnie in Moray (400 yards), apparently native at the former station, but introduced to the latter. It is B. pratensis and B. arvensis of Smith, and yet the figure

in English Botany seems to have been drawn from a plant of true B. arvensis, though not good. It is quite possible that there are two species, the pratal and agrestal, included here.

1356. BROMUS MOLLIS, *Linn.*

1356, b. (B. pseudo-racemosus, *Lond. Cat.*)
(B. racemosus, *Lond. Cat.* edit. 3.)

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pratal, &c. This very common grass is usually well known to British botanists, and in its typical form is scarcely ever mistaken. But in the remarks under B. secalinus, I have intimated that a slight variety of it is confused by some botanists with the pubescent state of B. secalinus. On the other side, a non-pubescent state, usually with a less branched or more elongate panicle (B. pseudo-racemosus), is also confused with B. commutatus. Thus, the name of "racemosus" signifies either commutatus *or* pseudo-racemosus, the latter a variety of B. mollis. Mr. Syme thought B. mollis an introduced species in Orkney, and a similar suspicion attaches to the more elevated localities for it in the Highland provinces.

BROMUS ARVENSIS, *Linn.*

Area [1 2 (3) 4 5 * 7 8 9 (10) 11 12 13 14 (15) 16].

Alien. Has occasionally, but very seldom, been found in Britain; and then only as an introduced and temporary straggler. I have seen specimens from the provinces of Thames (Mr. G. S. Gibson), and Fife (Mr. Syme). All the other specimens seen by myself under name of B. arvensis in English collections, and these have been rather numerous, belonged to B. commutatus.

BROMUS, *Sp. var.*

B. PATULUS, *M. & K.*—(Area 10). Alien. In Yorkshire, accidentally introduced (Bab. Man).

B. SQUARROSUS, *Linn.*—[Area 1 2 3]. Alien or incognit. Said to have been found in Somerset, Sussex, and the Metropolitan circuit. But either some errors have occurred about the species, or the specimens observed had probably arisen from imported seeds.

B. RIGIDUS, *Roth.*—Area (15). Alien. Said to have been found in Fifeshire, and perhaps the same thing with the B. madritensis indicated from the same county.

B. TECTORUM, *Linn.*—Area (3 * 15). Alien. Somewhat hastily taken hold of, and described as a true English species lately, on the faith of specimens found near a flax-mill at Hoddesdon, in Hertfordshire. G. Don enumerates the plant, or at least the name, in his Account of the Botany of Forfarshire.

1357. BRACHYPODIUM SYLVATICUM, *Beauv.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Ross, ——?
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 250 yards, in East Highlands (Dickie).
Range of mean annual temperature 52—44.

Native. Sylvestral. Plentiful in England; uncommon in the Highland provinces, and perhaps quite scarce there unless near the coast line. My notes do not show that I ever observed this species in the valleys of the Highlands, many of which have been examined. I possess a specimen from "Scalpa", in Orkney, very probably found there by Dr. Gillies. This, and the name marked in the list of Ross plants, are my only authorities for the two most northern provinces. Professor Dickie assigns to it an elevation of 800 feet, in Aberdeenshire. Not quite certain that it occurs in the Lake province.

1358. BRACHYPODIUM PINNATUM, *Beauv.*

Area 1 2 3 4 5 * * 8 * 10 * [12 * * 15].
South limit in Dorset, Hants, Sussex, Kent.
North limit in York.
Estimate of provinces 7. Estimate of counties 30.
Latitude 50—55. Germanic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Channel ?

Ascends to 150 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Pascual, Rupestral, &c. Although extending westward into Somerset and most counties of the Severn province, this species appears to be otherwise unknown in the westerly provinces; hence it is assigned to the Germanic type. It has been said to grow in Devon and Cumberland (Bot. Guide), and also in Fife (Woodf. Cat. Edin.); but will require to be confirmed by better authority in those counties. Between 400 or 500 feet of altitude by the road side at Marston Maisy, in Wilts, according to Mr. Withers. I have seen it at 100 or 150 yards elsewhere. But if it be correctly reported from the High Force of Tees (Mr. S. King, in Phytol. i. 114), that altitude is perhaps much exceeded, though I do not know the true elevation of the High Force.

1359. TRITICUM CANINUM, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 * 17 [18].

South limit in Cornwall, Isle of Wight, Kent.

North limit in Ross, Moray, Banff, Aberdeen.

Estimate of provinces 16. Estimate of counties 60.

Latitude 50—58. British type of distribution.

Agrarian region. Inferagrarian—Superagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—46.

Native. Sylvestral, &c. Not a common plant, although found in many counties. The absence of any record of its existence in the provinces of Lakes and West High-

lands may be attributable to the incomplete state of our information about the botany of those provinces. The name is marked in the Rev. G. Gordon's List of Ross plants, and also in a list of Orkney plants from the Rev. C. Clouston; so that it is possible there may really be a provincial generality for this species. Probably ascends in Scotland considerably higher than is indicated in the formula; but I have no note of observing it farther within the Highlands than at the head of Loch Earn, not much over 100 yards of altitude. If T. biflorum (infrà) belong to this species, and the alleged station of "rocks on Ben Lawers" may be relied upon, T. caninum should be considered to ascend into the arctic region.

1360. TRITICUM REPENS, *Linn.*
1360, b. TRITICUM LITTORALE, "*Host.*"

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, in East Highlands.
Range of mean annual temperature 52—44.
Native. Agrestal, Septal, &c. A very general grass. The maritime variety, T. littorale, appears to grow all around the coast of Britain, northward to Shetland.

1362. TRITICUM JUNCEUM, *Linn.*
1361. TRITICUM LAXUM, *Fries.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 50 or 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to North Isles.
Range of mean annual temperature 52—45.

Native. Littoral. The second of these species has only very recently been distinguished from T. junceum by the botanists of England, and its localities, &c. cannot therefore be separated from those of T. junceum, under the name of which they have doubtless always been recorded. I cannot even yet satisfactorily assign the specimens in my own herbarium to the respective species. The aggregate species (junceum and laxum,—one or other, or both) has been recorded from the coasts of every province, either in print or by unpublished notes. It is also named in Mr. Buckman's short list of littoral and sub-littoral plants, which occur in the vale of the Severn, many miles from the sea, and are suggested by him, with considerable show of plausibility, to be the remains of a maritime flora, formerly bordering a strait of the sea, then running between England and Wales. T. laxum is said to have been found in Sussex (Mr. Mitten!), Pembroke (Mr. Babington), Lincoln (H. C. Watson), Durham (Mr. Hort), Edinburgh (Dr. Balfour), Arran (Mr. Babington).

TRITICUM CRISTATUM, *Schreb.*

Area [15].

Incognit. Stated to have been found by George Don, on steep banks and rocks by the sea-side, between Arbroath and Montrose (E. F.). The late Mr. N. J. Winch gave me a specimen, said to have been received from Don, and localized by its label on the sands of Barrie. In a letter from Sir W. C. Trevelyan, dated August 19, 1839, he remarks that T. cristatum was then "abundant in Lunan Bay, near Arbroath." But in 1848, Mr. Gardiner asserted in his Flora of Forfarshire, that Don "alone has found it." On which side is the error?

TRITICUM BIFLORUM, "*Brig.*"

Area [15].

Incognit. "The present is one of those plants gathered by the late Mr. G. Don, which appear to have been overlooked by other botanists. His label in Mr. Borrer's herbarium, runs thus: 'Triticum alpinum, nova spec.—it differs from the *caninum* by its short arista and upright spikes, and from the *repens* by not running at the roots.' No date is mentioned. It is thus clearly evident that he distinguished it as a new species. The only British *Triticum* with which it can be confounded is *T. caninum*, from which it may be distinguished by its leaves smooth on both sides, its usually two-flowered spikelets, and its want of the long awn; it also appears to be a more slender plant with narrower leaves" (Mr. Mitten, in London Journal of Botany, viii. 583). The locality indicated is

"Rocks on Ben Lawers." Arnott and Babington place Don's plant as a variety of T. caninum.

1363. LOLIUM PERENNE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 yards, or upwards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Pascual, &c. One among the commonest grasses of Britain; ascending the Highland valleys up to 1100 feet, or perhaps more; but whether indigenous or only introduced at these higher localities may admit of question.

1363*. LOLIUM ITALICUM, *Braun.*

Area (1 2 3 * * 6 * 8 9 10 11 * * * 15 16).

Alien. Having been much sown by farmers, during the last eight or ten years, this imported grass may now be frequently found in a half naturalized state. Whether it be a species permanently distinct from L. perenne and L. multiflorum, is a question of little importance here; the variety or species, whichsoever it be, not truly belonging to our indigenous flora, and therefore not to be counted as an unit in any numerical summaries of distribution.

1364. LOLIUM TEMULENTUM, *Linn.*
1364, b. LOLIUM ARVENSE, *With.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 * (18).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, in England.
Range of mean annual temperature 52—47.

Colonist. Agrestal. Occasionally met with throughout Britain, though probably of foreign origin, and introduced among seeds imported for agricultural purposes. In the south of England it has become an established weed, although even there its appearance in any given locality is uncertain and mostly temporary. Imported into Shetland, according to Mr. Edmondston, the only authority for its occurrence in the province of North Isles. L. arvense of English botanists differs solely by the shorter or wholly absent awn.

LOLIUM LINICOLA, *Sond.*

Area * 2 * * * * * * * 10.

Alien. This has been quite lately distinguished from L. arvense (With.) by Mr. Mitten, who found it at Hurstpierpoint, in Sussex; and it is said to have been also gathered by Mr. James Ward, near Catterick bridge, in Yorkshire. Likely enough it may be found in other parts

of England, and may have been passed by as L. arvense. It seems, indeed, to be the species which has hitherto represented the L. arvense of Withering, in the eyes of various continental botanists. Though much resembling the true L. arvense, it appears sufficiently distinct, according to present and current views of species, which have much changed since the age of Linnæus. Now-a-days the theoretic definition of a species is almost totally disregarded in practice; any minute differences that can be detected between plants, by minds naturally qualified to dwell on little things, and therefore acute in detecting little differences, are very often held sufficient to make a diagnosis between species. And the more minute or petty is the difference, the better character does it frequently appear to be considered.

1365, b. ELYMUS GENICULATUS, *Curt.*

Area [3].

Incognit. This is asserted to have been originally brought from a marsh near Gravesend in Kent, by Mr. Dickson. It is now known only in gardens; and there is difficulty in conceiving that so conspicuous a grass can remain unnoticed, if indigenous and still existent in that locality. I am not aware that it was ever found by a second botanist on the coast of Kent; but certainly the grass exists, and looks sufficiently distinct from E. arenarius in its present garden-habitats. How and where did it really originate? Has it ever been propagated by seeds in gardens, or always by division only? The bending of the rigid rachis is not invariable, though very usual; and if this were the only character, it would be of very little

value; but there are also the distant spikelets and narrower and longer glumes, to afford a diagnosis at once conspicuous and technical.

1365. ELYMUS ARENARIUS, *Linn.*

Area 1 2 * 4 * 6 7 8 9 10 11 12 13 * 15 16 17 18.
South limit in Devon, Dorset, Norfolk.
North limit in Shetland, Orkney, Caithness.
Estimate of provinces 16. Estimate of counties 40.
Latitude 50—61. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to North Isles.
Range of mean annual temperature 51—45.
Native. Littoral. Inclining much to the Scottish type, by its greater frequency and more free-flowering on the coasts of the Highland provinces, and in the North Isles. It appears to be known in six counties only of the first seven provinces of England and Wales, although twenty counties of those provinces have a coast line of considerable extent.

1366. HORDEUM SYLVATICUM, *Huds.*

Area * * 3 4 5 * 7 8 9 10 11.
South limit in Wilts, Hants, Herts.
North limit in Northumberland, Lancaster.
Estimate of provinces 8. Estimate of counties 20.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends nearly to the coast level.

Ascends to 200 yards, or upwards, in Humber.

Range of mean annual temperature 50—46.

Native. Sylvestral. A scarce plant in proportion to the number of counties (18) in which it has been recorded; and some of those counties now rest upon old authority, not directly verified of late, nor having received that indirect confirmation which is given by the discovery of other neighbouring localities or habitats. For example, I find no authority for the existence of the species in Wales, excepting Mr. Griffith, as quoted in the Botanist's Guide, and this would hardly suffice to justify the admission of No. 7 in the area, if the species had not been found in the adjacent provinces of Severn and Mersey. The altitude of 200 yards is indicated on faith of a specimen from Mr. Tatham, labelled as found at Cave Hole Wood, near Settle. If that station be much above Settle, the species may be said to attain the superagrarian zone by altitude, although not reaching so far by latitude.

1367. HORDEUM PRATENSE, *Huds.*

Area 1 2 3 4 5 6 7 8 9 10 11 * [13] 14.

South limit in Devon, Isle of Wight, Kent.

North limit in Berwick, Northumberland, Lancaster.

Estimate of provinces 13. Estimate of counties 50.

Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Pratal. Not at all peculiar to the coast, and yet apparently more frequent in the vicinity of the sea than in the inland counties. On the authority of "Mr.

J. Neill," it was recorded to grow on or by Salisbury Craigs, Edinburgh; but I looked for it there in vain, and it is not numbered as a plant of that neighbourhood in the Catalogue published by the Botanical Society of Edinburgh. "About Edinburgh and Ayr" (Brit. Flo. edit. 6). Does it truly grow wild about Ayr? The Lake province would seem not unlikely to produce this species.

1368. HORDEUM MURINUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * * 14 15 * * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Kincardine, Forfar, Fife, Lancaster.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Glareal, &c. A frequent English grass, becoming rare or local in Scotland. Indeed, there is a remark in the Flora Scotica, that "Mr. Arnott thinks it is not found to the north of the Firth of Forth." It would thus appear to have been very little known in Scotland thirty years ago. But, at that time, Scottish botany was very little known. Mr. George Lawson says that H. murinum is abundant about ruins and old buildings in St. Andrews, Fifeshire; and by the Flora of Forfarshire we learn that it is plentiful along the coast of that county. It is stated also to occur plentifully a mile from Bervie, in Kincardineshire. In Moray it is a plant "certainly introduced", according to the Rev. George Gordon. The name is included in Lowe's List of Orkney plants.

1369. HORDEUM MARITIMUM, *With.*

Area 1 2 3 4 5 6 * 8 9 10 11 * * * [15].
South limit in Cornwall, Isle of Wight, Kent.
North limit in North Durham (Islandshire), Chester.
Estimate of provinces 11. Estimate of counties 20.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to Tyne province.
Range of mean annual temperature 52—48.

Native. Littoral. Abundant in several places on the coasts of England; but either often overlooked or very interruptedly distributed, at least, on the western side of the island. I have gathered it on the coast of North Lincolnshire, but have seen no specimen from any more northerly locality. Its existence at all in Scotland is doubtful, and most unsatisfactorily certified. In the Flora Scotica, on authority of George Don, it is reported as found on the coast of Forfarshire. In Gardiner's Flora of that county, no station is mentioned; but the name is entered in the list, with the unsatisfactory addition of the words "on the coast", without any authority for this vaguely expressed habitat. Did Mr. Gardiner simply borrow this indication from the Flora Scotica? And did G. Don mistake H. murinum (see that species) for H. maritimum, deceived by the coastwise growth of the latter in Forfarshire? In the sixth edition of the British Flora, we are told of H. maritimum, that it is "Rare in Scotland and principally found in Angusshire." This ought to imply that stations in some other Scottish county or counties were known to the Editor or Author of the

British Flora; but if so, where are they? Even in Babington's Manual, third edition, the species stands with the general indication of England, Scotland, and Ireland. On what uncertain, unsifted, unsatisfactory data our vague ideas of the areas and general distribution of species have hitherto been allowed to depend! Truly, it is full time that some attempt should be made towards picking out and discarding the copiously intermingled errors from amid the vast mass of accumulated data bearing on the subject of the present work. Under existing circumstances, it seems better to pass over to the side of being too sceptical, rather than to remain on that of being too indolently confiding, while the true middle line remains undetermined. The negative inconvenience of incompleteness in our admitted facts, is to be preferred before the positive evil of admitting errors to stand for ascertained truth in scientific matters.

1370. NARDUS STRICTA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1100 yards, in East Highlands.
Range of mean annual temperature 52—36.

Native. Ericetal. One of the most widely distributed of our native grasses, though it may be less familiar to the eyes of many botanists, than are the grasses of the meadows and pastures. It rises slightly above the Cal-

luna vulgaris on some hills both of the East and West Highlands, but probably not ascending far up into the superarctic zone.

1371. LEPTURUS INCURVATUS, *Br.*

1371, b. LEPTURUS FILIFORMIS, "*Trin.?*"

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 (15).
South limit in Cornwall, Isle of Wight, Kent.
North limit in Haddington, Linlithgow, ——?
Estimate of provinces 14. Estimate of counties 30 or 40.
Latitude 50—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the sea level, in the Peninsula.
Ascends, at the sea level, to East Lowlands.
Range of mean annual temperature 52—48.

Native. Littoral. On the shores of England, the incurved and straight forms pass into each other by gradations so regular and gradual as to prohibit any clear division between them. But I have never seen in Britain those very short, somewhat subulate, thicker spikes, such as are produced on the southern coast of Europe. According to Dr. R. Graham, the "recurved form" has been found by Mr. Wallich, on ballast-heaps, at St. David's, Fifeshire, "probably introduced." Inverkeithing, in the same county, on authority of Dr. Andrew Robertson, has been also reported for one of the forms.

ÆGILOPS OVATA, *Linn.*

Alien? There is somewhere a memorandum or record of the occurrence of this grass in England; but while printing this portion of the Cybele I am unable to find the proper reference.

LXXXVII. FILICES.

By including the Filices in this work, together with the somewhat discordant group of "Pteridioides" (Lycopodiaceæ, &c.) which will follow them, I pass now beyond the phænogamous plants, to which my former writings on the localities and distribution of plants have been almost exclusively restricted. At the time of compiling the New Botanist's Guide it was a question with me, whether the Ferns should be included therein, and the question was answered in the negative, in consequence partly of an application from Mr. Francis, who requested the loan of my notes and lists, and undertook to publish the localities and altitudes in his then forthcoming Analysis of British Ferns. This undertaking was performed, although not without sundry errors and miscopyings of the manuscript notes. Subsequently, the publications of Mr. Newman have very greatly improved our knowledge of the Ferns and of their localities; so that the omission of the latter from the New Guide has been since well made up for. Mr. Newman's collection of localities, however, is open to one very grave objection, in the use of an alphabetical arrangement of the counties, which of necessity disperses the localities into a pell-mell medley. If we attempt to trace distribution by aid of Mr. Newman's books, we are compelled to skip from Cornwall to Cumberland, from Cambridge to Caernarvon, from Kent to Lancashire; and then to skip back, to and fro, among the other counties which are intermediate between those by their geographical position, although their names happen not to be intermediate alphabetically. In a work on the British Ferns, now in press from the pen of Mr. Moore, and a small part

of which I have seen in its manuscript state, this very objectionable inconvenience is well obviated by the adoption of an arrangement and enumeration of the localities, corresponding with the eighteen provinces adopted in the Cybele. The effect of this course is, that the localities are arranged geographically, instead of being *dis*-arranged alphabetically; each locality mentioned in the book, following that near to which it is placed in nature. Altogether, perhaps, it may now be said that the geographical and topographical distribution of the Ferns is better known than that of the phanerogamous plants. But beyond the Filices and Pteridioides we cannot go. The distribution of the British Cellulares remains unknown, and appears likely long to continue unknown.

1372. CETERACH OFFICINARUM, *Willd.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * 15 16.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Argyle, Perth, Northumberland.
Estimate of provinces 15. Estimate of counties 50.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, more or less, in Trent and Ouse.
Range of mean annual temperature 52—46.

Native. Rupestral. Scarcely to be designated a common plant, although widely distributed, and recorded for upwards of forty counties. Possibly some of its stations in the northern provinces of England may exceed the midagrarian zone, either by altitude or by proximity to the higher hills; and its few localities in the Highland provinces are near the horizontal limit of that zone. This

fern seems particularly to prevail on calcareous rocks and on walls, though not quite restricted to such situations. Mr. R. W. Smith (Phytol. iv. 276) finds it growing as an epiphyte in the vicinity of Winchester; but the tree on which it occurs there is stated to overhang a deep chalk lane.

1373. WOODSIA ILVENSIS, *Br.*

Area * * * * * * 7 * * [10] 11 [12] 13 * 15.
South limit in Caernarvon, Durham. [Westmoreland?]
North limit in Forfar, Dumfries. [Perth? Peebles?]
Estimate of provinces 5. Estimate of counties 6.
Latitude 53—57. Highland type of distribution.
Arctic region. Inferarctic zone.
Descends to 650 yards, less or more.
Ascends to 700 yards, more or less.
Range of mean annual temperature (about) 41—40.

Native. Rupestral. A very scarce fern, hitherto ascertained only in the four counties indicated above, and reported from an equal number of others, uncertainly or erroneously. In the first edition of the 'Analysis of British Ferns', by Mr. Francis, a locality is thus indicated; "Near Richmond, Yorkshire, *Mr. J. Wood*". This was an error of compilation, and it is excluded from the second edition. But it re-appears in the Yorkshire Flora, by Mr. Baines, along with two other localities (or two descriptions of one single locality) which are probably in Durham, and thus should have had no place in a *Yorkshire* Flora. The county, however, is not an unlikely one for the plant. Again, Mr. Sylvanus Thompson has recorded (Phytologist i. 331) that a single frond of Woodsia ilvensis was gathered by his father, from Crosby Ravensworth

church, Westmoreland, on the 17th of August, 1798; and that, after having been shown to several botanists in London, who were unable to give a name for it, the frond was eventually sent to Sir J. E. Smith, who pronounced it to be the species now under notice. The church having been since rebuilt, the locality no longer allows of verification. But the frond being still or recently (1842) in the possession of Mr. S. Thompson, the name is probably correct; any present doubt attaching rather to the alleged station, than to the plant itself. Thirdly, the fern may possibly grow within the county of Peebles, as we are told by Mr. William Stevens (Phytologist iii. 392) that it occurs in considerable abundance, on very steep crumbling rocks, among the hills that divide the counties of Dumfries and Peebles. Fourthly, it has been reported to grow on Ben Lawers; but the W. hyperborea was perhaps there mistaken for the present species. I am not able to state the altitude with any exactness. The only place in which this fern has been gathered by myself, is that near the station of the Oxytropis campestris, on the mountains of Clova, Forfarshire, which is rudely estimated at 600 or 650 yards. Probably the plant grows at a greater altitude in Wales, and may there attain to the midarctic zone. The alleged station of Crosby Ravensworth *church* would bring down the species into the agrarian region, and perhaps into the midagrarian zone. But is it not more probable that the frond was picked on the hills near that church, and not on the church itself? I have repeatedly had occasion to remark that many botanists of the last century were indifferent about the precise stations of plants, and very loose in their records.

1373*. WOODSIA HYPERBOREA, *Br.*

Area * * * * * * 7 * * * * * * * 15.
South limit in Caernarvon.
North limit in Perth.
Estimate of provinces 2. Estimate of counties 2.
Latitude 53—57. Highland type of distribution.
Arctic region. Midarctic zone.
Descends to 800 yards, less or more.
Ascends to 900 yards, more or less.
Range of mean annual temperature, say 40—38.

Native. Rupestral. More scarce than the preceding species; Perth and Caernarvon being the only two counties sufficiently authenticated for the present species. The names of "Mr. Brand, Mr. Watson" are cited in the British Flora, for the occurrence of Woodsia hyperborea on the Clova Mountains. It was Mr. Watson (the writer of this work, then a very young botanist) who showed the station to Mr. Brand in 1831; and his specimens, picked in that year, and again in 1844 in the same locality, are undoubtedly W. ilvensis; although pronounced to be W. hyperborea by an older botanist in 1831. The indicated altitudes are little better than rough guesses, scarcely deserving to be called estimates, and very far from the precision of measurements or calculations. Opinions have differed much, as to the existence of two species of Woodsia in Britain. Dr. Robert Brown informed me that he had seen additional grounds for supposing their distinctness since his paper on the genus was printed in the Linnean Transactions, where he expressed a sort of equally balanced uncertainty on the point. The numerous specimens in the herbarium of Sir W. J. Hooker, received

from various countries, appear more to support than to oppose the views of those botanists who hold the two to be distinct. Yet a circumstance has been reported to me, which, if correct, would establish the specific identity of the two beyond question or cavil. The circumstance is shortly this:—Mr. Macnab had divided a root of W. hyperborea (believed to have been true hyperborea originally) into four portions; he sent one portion of it to Professor Arnott; but this same portion turned out to be W. ilvensis, when it reached the hands of Dr. Arnott. I am not aware from what locality the plant had originally been brought into the Botanic Garden at Edinburgh, under the care of Mr. Macnab.

1374. POLYPODIUM VULGARE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Rupestral, Sylvestral, &c. The only doubt that arises, in respect to the complete comital distribution of this common fern, does so from the circumstance of Mr. Newman stating (Phytol. i. 34) that the Polypodium vulgare of Edmondston's list of Shetland plants, in the Annals of Natural History, was really Blechnum boreale, as shown in a specimen of the latter, which Mr. E. had labelled by the name of the former fern. A barren frond

of the Blechnum might be mistaken for (or only accidentally substituted for) the Polypodium by a young botanist; but as Edmondston included P. vulgare in his Shetland Flora, published some years later, indicating it as "frequent" in the Isles, it probably enough does occur there. Shetland is an intermediate habitat between Orkney (Miss Boswell, &c.), and Faroe (Sir W. C. Trevelyan), for each of which there is sufficient authority. Probably scarce above the agrarian region; yet it may rise to a greater elevation than 700 yards.

1374*. POLYPODIUM ALPESTRE, *Koch.*
(Pseudathyrium alpestre, *Newm.*)

Area * * * * * * * * * * * * * * * 15 16.
South limit in Forfarshire.
North limit in West Inverness-shire.
Estimate of provinces 2. Estimate of counties 4.
Latitude 56—57. Highland type of distribution.
Arctic region. Midarctic—Superarctic zones.
Descends to 800 yards, less or more.
Ascends to 1000 yards, more or less.
Range of mean annual temperature, say 39—36.

Native. Rupestral. In July, 1841, I gathered two fronds of this fern in the great corrie of Ben Aulder, a lofty mountain situate on the west side of Loch Erricht, Inverness-shire, which is part of the boundary line between the East and West Highland provinces. Another frond of the same species was picked at some other spot in the neighbourhood of Loch Erricht, probably on the hills between Ben Aulder and the north end of the lake, but it might be on the hills of Drumochter Forest, eastward of the lake; and if the latter, the station would be

within Moray or Eastern Inverness. In 1844, I brought a frond of it from Canlochen Glen, in Forfarshire. These specimens (except the second from Ben Aulder, given to Mr. Babington) remained in my herbarium until 1851, first doubtfully labelled, and then temporarily forgotten. Their close resemblance to small fronds of Athyrium Filix-fœmina made me feel very uncertain whether they could be properly referred to Polypodium, until Mr. Newman (to whom the Canlochen frond was at length shown, when again recollected) decided it to be Polypodium alpestre. Now that it is known to be a native of at least two Highland counties, we may reasonably expect that it will be found in other counties by botanists who seek it in the knowledge of its close resemblance to Athyrium Filix-fœmina, for which latter fern this species may readily have been mistaken and passed by.

1375. Polypodium Phegopteris, *Linn.*

Area 1 2 [3] * 5 6 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Cornwall, Devon, Sussex.
North limit in Shetland, Sutherland.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—61. Scottish type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in ——— ?
Ascends to 1100 yards, in West Highlands.
Range of mean annual temperature 49—35.

Native. Rupestral, &c. It may at first appear an error to refer this fern to the Scottish or boreal type of distribution, when the zonal and latitudinal ranges are so wide or general, extending from the coast level to the high mountains, from the south of England to the extreme

north of Scotland. It is the great rarity of the plant in the most southerly or south-easterly provinces of England, that suggests the boreal rather than the British type. Of the 22 counties included in the four first provinces, 4 only have been reported to produce this species; and one of these (Middlesex) being little probable, and not certified on sufficient authority, can scarcely be reckoned in the census. Most of the other 60 counties doubtless produce this fern, which has been actually reported from about 45 of them. I do not know how far south this should be deemed a plant of the coast level. The altitude of its stations in the Channel and Peninsula may not be quite so low as to warrant an indication of the coast level in those provinces. The term 'rupestral' does not very accurately characterize the natural situations for this species; a combination of 'rupestral' with 'sylvestral' and 'uliginal' would be nearer the actual conditions of its growth,—a combination of drainage with shade and humidity.

1376. Polypodium Dryopteris, *Linn.*

Area [1 2 3] * 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Glamorgan, Warwick, Lincoln?
North limit in Sutherland.
Estimate of provinces 13. Estimate of counties 60.
Latitude 51—59. Scottish type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in ——— ?
Ascends to 900 yards, in West Highlands.
Range of mean annual temperature 48—37.

Native. Rupestral, Sylvestral. The remarks on the distributive type of the preceding species, P. Phegopteris,

might be almost repeated here, excepting that all the counties of the 4 first provinces must be considered dubious and inadmissible until verified by botanists fully prepared to distinguish between P. Dryopteris and P. calcareum; the localities recorded for the former of these two ferns, in Somerset, Wilts, Oxford, Essex, and Gloucester, some or all of them, very probably belonging to the latter species. At the opposite extremity also the range and area of P. Dryopteris are somewhat more restricted than those of P. Phegopteris, the present species not having been recorded from the province of the North Isles, and not ascending so high on the mountains. Found in Lincolnshire, according to the London Flora, but without the citation of any personal authority for the statement, and I know of no other record for that county. If Lincolnshire be incorrect, the line of limit would be carried upwards from Warwick into Derby and York,—that is longitudinally rather than latitudinally.

1377. POLYPODIUM CALCAREUM, *Sm.*

Area 1 2 3 * 5 6 7 8 9 10 11 12.
South limit in Somerset, Wilts, Oxford, ——— ?
North limit in Cumberland, Durham.
Estimate of provinces 11. Estimate of counties 15.
Latitude 51—55. Uncertain type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends below 100 yards, in the Peninsula.
Ascends to 300 yards, or upwards, in N. England.
Range of mean annual temperature 49—45.

Native. Rupestral. The stations on record for this species are much confused with those for P. Dryopteris, through misapplications or transfers of their names.

Whether its austral line can be drawn farther eastward than the county of Oxford is very doubtful. P. Dryopteris is stated by Warner, in Plantæ Woodfordienses, to grow very sparingly on the walls of Chingford church in Essex; but if either species grows there, the probability would seem to be greater for P. calcareum. Taking England alone, apart from Scotland, the distribution of the present species is more boreal than austral; and it might thus almost as truly be assigned to the Scottish as to the English type, although its total absence from Scotland would appear to render that a misnomer, and indicate the English type. It would associate with that small intermediate and partially distributed group, mentioned under Hutchinsia petræa (*Br.*—mis-written *Linn.*) in vol. i. p. 120, of this work. Mr. Thomas Clark informs me that the altitudes at which this species grows on Cheddar cliffs, in Somerset, are about 250 and 800 feet. Its highest limits in the northern provinces of England have yet to be ascertained.

1378. ALLOSORUS CRISPUS, *Bernh.*

Area 1 * * * 5 6 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Somerset, Worcester, Derby. [Devon ?]
North limit in Hebrides, Sutherland.
Estimate of provinces 15. Estimate of counties 40.
Latitude 51—59. Highland type of distribution.
A. A. regions. Midagrarian—Superarctic zones.
Decends to 150 yards, in North Wales.
Ascends to 1150 yards, in West Highlands.
Range of mean annual temperature 46—35.
Native. Rupestral, Pascual. Frequent on the mountains in many parts of Scotland and the northern provinces

of England, with a few outlying stations on the much lower hills of the Severn and Peninsula. According to a Report from the Botanical Society of Edinburgh, this fern was found by Mr. Ward in the county of Devon; but as that report may really intend Mr. Ward's locality of Simmonsbath in Somerset, the county of Devon is discarded here for want of more trustworthy authority than the Reports of the Society mentioned. The province of Trent requires confirmation; but one of its counties, Derby, reported by Mr. Howard in the Botanist's Guide, is sufficiently probable to be retained here; that of Rutland (Mr. Jackson, in With. Arr.) is much less probable. Scarcely to be considered a plant of the midagrarian zone.

1379. CYSTOPTERIS FRAGILIS, *Bernh.*
1379, *b.* CYSTOPTERIS DENTATA, *Hook.*
1379, c. CYSTOPTERIS ANGUSTATA, "*Sm.*"
CYSTOPTERIS DICKIEANA, (*Sim.*) *Newm.*

Area general.
South limit in Devon, Dorset, Sussex.
North limit in Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—59. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, or nearly so, in Peninsula.
Ascends to 1050 yards, in East Highlands.
Range of mean annual temperature 49—36.

Native. Rupestral. Rare in the southern, and especially the south-eastern provinces of England; becoming much more frequent northwards, and among the mountains. It is thus an example of the British passing into the Highland type. Opinions differ much as to whether

one species only, or several species are included under the above quoted names. Howsoever this question may eventually be answered and settled, it is at present impossible to separate their localities and properly refer them to the several varieties or species. In his 'History of British Ferns' Mr. Newman enumerates the names of seventeen counties, for which he possesses lists of ferns, and says that the Cystopteris is absent from all of them. It has, however, been reported from five of those counties, and recently in print on very good authority from two of them, Sussex and Leicester. Those of Dorset and Northampton, resting on old authority, it would be desirable to have verified afresh; the fifth county, Norfolk, was reported to me by Mr. S. P. Woodward.

1380. CYSTOPTERIS ALPINA, *Desv.*

Area (* * 3).

Alien. On a wall at Low Layton, in Essex, supposed to have been planted there. Under name of C. regia, this fern has been by some botanists identified or confused with a native fern of North Wales and the Highlands, corresponding in part with C. dentata of our descriptive Floras.

1381. CYSTOPTERIS MONTANA, *Link.*

Area * * * * * * [7] * * * * * * * 15.
South limit in Perth. [Wales ?]
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 56—57. Highland type of distribution.

Arctic region. Midarctic—Superarctic zones.

Descends to 900 yards, less or more.

Ascends to 1200 yards, more or less.

Range of mean annual temperature 38—35.

Native. Rupestral. Extremely local, according to our present knowledge of its distribution. First found in Scotland by Mr. William Wilson, "at the station of Saxifraga rivularis on Ben Lawers." Subsequently it was discovered on another mountain some miles westward of Ben Lawers, between Glen Dochart and Glen Lochay. Mr. Borrer describes this latter station as "Corrach dh' Ouffillach," a corrie on a hill called Mael Ouffillach. But Mr. Gourlie, the discoverer of the fern there in 1841, calls the corrie "Corrach Uachdar." Professor Arnott writes it, "Corrah dhu Cuachdar, sometimes called Corrachuachdar", and the adjoining mountain "Meal-cuachlar". Mr. Gourlie supposes the altitude to be somewhere between 2500 and 3000 feet; Professor Arnott says about 3000 feet. Hence the intermediate height of 900 yards, or 2700 feet, is indicated above. I suppose the station on Ben Lawers to be more elevated, but have not seen the place where Saxifraga rivularis grows on that mountain. For the supposed or suggested habitat of Wales, see Phytologist, i. 875.

1382. Aspidium Lonchitis, *Sw.*

Area * * * [4 * 6] 7 * * 10 11 [12 13] * 15 16 17 [18].

South limit in Caernarvon, York.

North limit in Sutherland. [Orkney ?]

Estimate of provinces 6. Estimate of counties 15.

Latitude 53—59. Highland type of distribution.

A. A. regions. Superagrarian—Superarctic zones.

Descends to 400 yards, in East Highlands.
Ascends to 1100 yards, in same province.
Range of mean annual temperature 43—36.

Native. Rupestral. Descends so low as 1550 feet in the west of Yorkshire, according to Mr. Newman; or 1500 feet, according to Mr. Tatham; which is rather lower (relatively to latitude) than 400 yards in the Highlands. I have only one note of seeing this species in the superarctic zone and above 1000 yards of altitude; namely, on a rock close under one of the high summits between Ben Lawers and Craigalleach, the precise altitude of which I do not know, but estimate it at nearly 1100 yards; the Calluna ceasing considerably lower, and thus leaving that summit to be accounted within the superarctic zone. The counties of Cambridge, Northampton, Glamorgan, Cumberland, and Lanark, recorded for the present species through misapplications of the specific name, or only on unsafe and unconfirmed authority, are excluded in the area above given. Mr. Duguid is said to have found a single plant of this species on Hoy Hill, Orkney; but as other botanists have not re-found it there, within my knowledge, the province of the North Isles is also excluded for the present.

1383. ASPIDIUM ACULEATUM, *Sw.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
South limit in Cornwall, Isle of Wight, Kent.
N. limit in Fife (Arnott), Bute (Murray): Hook. Scot.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 200 yards, or upwards, in Humber.

Range of mean annual temperature 52—46.

Native. Rupestral, Sylvestral. This is the use of a name, rather than the distribution of a species. Perhaps in most instances A. aculeatum intends a more highly developed state of A. lobatum; but in other instances, the name appears to be given to examples of true A. angulare. There are specimens however so truly intermediate between the well marked forms of the two latter named species, that I must confess great doubt or difficulty frequently felt in deciding to which species they should be assigned; assuming the existence of two species, and only two species, to represent the three names of angulare, aculeatum, and lobatum. The plants intended by the first and last of these three names, are readily distinguished by the texture and division of their fronds, while we refer the intermediate or dubious forms to an interposed A. aculeatum; but if we quash this latter as a species, the distinctions become gradually very faint indeed. On the whole, A. aculeatum, usually so labelled, combines better with A. lobatum, than with A. angulare.

1383, b. ASPIDIUM LOBATUM, *Sw.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.

South limit in Devon, Isle of Wight, Kent.

North limit in Ross, Aberdeen, Argyle.

Estimate of provinces 17. Estimate of counties 75.

Latitude 50—58. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 700 yards, in East Highlands.

Range of mean annual temperature 51—40.

Native. Rupestral, Sylvestral. It will be seen that the distribution of this species almost completely includes that indicated for A. aculeatum; having a wider range of latitude and altitude, higher census, &c.. The only apparent exception, is the absence of the present species from Cornwall, which is perhaps rather an absence of record than a real absence of the species. Thus, if we were to unite the two into one species only, their distribution would still be indicated by the same formula, as above filled up for A. lobatum only, with the one slight exception: A. lobatum, in its reduced or simplified form of 'lonchitidioides' rises almost into the midarctic zone, by situation though not by absolute altitude. I brought a root from the height of 2100 feet, in the pass from Glen Beg to Glen Clunie, East Highlands, in the year 1844. Cultivated in my garden since that year, it has gradually become the ordinary A. lobatum, as seen at trifling elevations in England.

1384. ASPIDIUM ANGULARE, (*Willd.*) *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 * 12 * 14.

South limit in Devon, Isle of Wight, Kent.

North limit in Isle of Man, Westmoreland, Berwick?

Estimate of provinces 12. Estimate of counties 40.

Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—48.

Native. Sylvestral, &c. Much less widely distributed than A. lobatum, although it may be more frequent than the latter in the southern provinces. I have seen specimens which I refer to A. angulare from York and Westmoreland, and various other counties to the southward, but none from Scotland. The Aspidium "aculeatum" of the printed labels of the Botanical Society of Edinburgh (1839—Kent—Stevens) is A. angulare, not A. lobatum. But I possess an example of A. lobatum from the same Society, under the manuscript name of A. "aculeatum" (no date—Collinton woods, Edinburgh). It will be seen from the mention of these examples, that A. aculeatum is actually represented in herbaria by either of the others, as intimated under head of the latter species or name.

1385. LASTREA THELYPTERIS, *Presl.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * * 15 * * [18].
S. limit in Somerset, Isle of Wight, Kent. [Devon ?]
North limit in Forfar. [Shetland ?]
Estimate of provinces 13. Estimate of counties 30.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula ?
Ascends to 200 yards, in Humber.
Range of mean annual temperature 51—46.

Native. Uliginal. Sparingly scattered through England, and known certainly in but one county of Scotland. It is to be feared that in several of the recorded stations the Lastrea Oreopteris has been mistaken for the present much rarer species, and that in other localities this fern has since been destroyed by drainage. Specimens are in my herbarium from Somerset, Surrey, Suffolk, Norfolk,

Nottingham, Forfar. The provinces above indicated for the area by their Nos., rest on the following authorities :— Peninsula (Mr. Robert Withers !), Channel (Dr. Bromfield), Thames (H. C. Watson), Ouse (Mr. James Paget ! Mr. S. P. Woodward !), Severn (Rev. W. A. Leighton), South Wales (Mr. Gutch, &c.), North Wales (Mr. J. E. Bowman), Trent (Dr. Howitt !), Mersey (Mr. William Wilson), Humber (Mr. Tatham, &c.), Tyne (Mr. Embleton), Lakes (Rev. George Pinder; Hutchinson), Forfar (Mr. Maughan !). These authorities appear sufficient to establish the several provinces. Further, two localities are given for L. Thelypteris in the Flora of Shetland, which are viewed with distrust, while the species remains unknown between Shetland and Forfar.

1386. LASTREA OREOPTERIS, *Presl.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 950 yards, in East Highlands.
Range of mean annual temperature 51—37.

Native. Ericetal, Sylvestral. Recorded from 60 counties or upwards; but rather doubtful whether 75 or 80 would be the better comital estimate. It is worthy of note that a species so widely and generally distributed, and the stations for which may be considered countless, should have been classed among the rarer plants by Turner and Dillwyn, in the original Botanist's Guide.

1387. Lastrea cristata, *Presl.*

Area [1 * 3] 4 [5] * * 8 9 [10 * * * * * 15].
South limit in Suffolk, Norfolk.
North limit in Nottingham, Chester.
Estimate of provinces 3. Estimate of counties 4.
Latitude 52—54. Local type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Ouse.
Ascends to 100 yards, less or more.
Range of mean annual temperature 48—47.

Native. Uliginal. Certainly known only in the four counties above mentioned for its limits. Has been reported from various other counties also, upon unsafe authority, or unintentionally through applying the name "cristatum" to other ferns. In May 1851, Mr. F. J. A. Hort favoured me with some notes and localities, for use in this work, and among which I find the following passage, well deserving the attention of botanists who may have the opportunity of examining a series of L. cristata in its natural stations:—"I cannot believe L. cristata to be more than a state of L. spinosa. The general character and texture of both agree together, and are quite unlike those of L. multiflora. Those who have seen it growing speak of the plane of each pinna being nearly vertical to that of the general frond, which is not the case in L. spinosa. But I have seen precisely the same condition in L. multiflora (concurrent with other modifications) in boggy soil, under particular circumstances."

1388. LASTREA FILIX-MAS, *Presl.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 500 yards, in East Highlands.
Range of mean annual temperature 52—41.
Native. Sylvestral, Rupestral. Quite one of our commonest and most widely distributed ferns; but it is rare above the agrarian zone.

1389. LASTREA RIGIDA, *Presl.*

Area * * * * * * * * 9 10 * 12.
South limit in York, Lancaster?
North limit in Westmoreland.
Estimate of provinces 3. Estimate of counties 3.
Latitude 53—55. Local type of distribution.
Agrarian region. Superagrarian zone.
Descends to 400 yards, or less.
Ascends to 500 yards, or upwards,
Range of mean annual temperature, say 45—43.
Native. Rupestral. I have not seen the stations for this fern, which appear to be half a dozen or more, and all included within a small area, in the approximating portions of the counties of Westmoreland, Lancaster, and York; but whether actually within both of the two former,

or only in one of them, I cannot clearly make out by the descriptions. There is one other distant station on record; namely, Woolston Moss, near Warrington (Mr. W. Christy, in Mag. Nat. Hist. vi. 56); but this out-lying and low-lying station may be an error. The indications of altitude, zone, and temperature, must be taken as partial approximations only; their actual range being perhaps more extended.

1390. LASTREA SPINULOSA, *Presl.*
1390, b. LASTREA ULIGINOSA, *Newm.*

Area 1 2 3 4 5 6 7 8 9 10 * 12 * * [15 16 17 18].
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Cumberland, York. [Ross? Hebrides?]
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula?
Ascends to 200 yards, or thereabouts, in Humber.
Range of mean annual temperature 51—46.

Native. Sylvestral, &c. The localities of this fern, the L. spinosa of Newman's History, have been so inextricably confused with those of Lastrea dilatata, the L. multiflora of Newman, that almost all of them may be said to require verification; unless it be those which have been reported within the last half dozen years, and by botanists who had carefully studied the distinctive characters first clearly given by Mr. Newman, and subsequently by Mr. Babington. I possess specimens of L. spinulosa from Surrey, Middlesex, Essex, Norfolk, Warwick, Chester, and Cumberland. The authorities on which I give the area above, are the following:—Peninsula (Rev.

W. H. Coleman), Channel (Mr. Borrer), Surrey (H. C. Watson), Ouse (Mr. S. P. Woodward!), Severn (Rev. A. Bloxam!), South Wales (Mr. Motley), North Wales (Rev. W. A. Leighton), Trent (Rev. W. H. Coleman), Mersey (Mr. Francis Brent!), York (Mr. James Ward), Lakes (Mr. C. C. Babington!). I may repeat the remark of Mr. Newman (History, p. 210), to the effect, that I also have never seen a specimen in or from Scotland. Mr. Thomas Moore, however, informs me that he possesses a specimen, given to him by Sir W. C. Trevelyan, as gathered near Brahan Castle, in Ross-shire. Balfour and Babington enumerate "Lastrea spinulosa" among the plants seen by them in the Hebrides, in 1841; but I doubt whether either of those botanists was able to distinguish clearly between L. spinulosa and L. dilatata, ten years ago. The same suggestion will apply with equal force to the various other authorities for the occurrence of L. spinulosa in the East, West, and North Highlands. I do anticipate, however, that it may eventually be proved a Scottish species; although fearing to rely upon the distant and solitary locality of Brahan Castle, while the only well certified habitat in Scotland.

The LASTREA ULIGINOSA is so intermediate between L. spinulosa and L. cristata, that botanists appear quite divided in opinion, whether it is a third species or simply a variety;—and, if a variety, to which species it should be assigned. It grows with L. cristata in the counties of Norfolk, Nottingham, and Chester; and has been reported to occur also in Essex (Mr. John Lloyd) and Kincardine (Mr. J. T. Syme). See Phytologist iii. 678, and iv. 22, 72, 106, for information about L. uliginosa and its localities. Perhaps the suggestion of Mr. Hort, before quoted under L. cristata, may be the true solution of the difficulty, by re-combining the three into one species.

1391. LASTREA DILATATA, *Presl.*
1391, b. LASTREA GLANDULOSA, *Newm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 1150 or 1200 yards, in East Highlands.
Range of mean annual temperature 52—35.

Native. Sylvestral, Rupestral. A common fern; and apparently so much more frequent than L. spinulosa, that the stations may almost always be rightly assigned to the present species, when either name has been used for the two species indiscriminately. Examples from the low grounds of the south of England differ much in outline and division from the small examples found high up the Highland mountains; but these differences do not appear adequate for specific diagnosis. Even at equal elevations, there are differences among the plants which have been pronounced specific; as in the instance of L. glandulosa of Newman, a species founded upon a solitary plant of L. dilatata (as it would appear) observed by Mr. Purchas in Dean Forest, Gloucestershire. I am indebted to Mr. Purchas for a frond from that plant, which is certainly remarkable by its decidedly glandular character; but I possess other specimens which appear to connect it with the more usual form of L. dilatata, particularly one from Titterstone Clee Hills, labelled by Mr. Edwin Lees doubtfully "Aspidium rigidum?" This specimen is in bad

condition, but better may perhaps be gathered there by some botanist, if I add the direction to the spot—"north side, among the basalt stones, beneath the summit." The Aspidium dumetorum of Smith, I suppose, also is a form of L. dilatata.

1392. LASTREA FŒNISECH, *Wats.*

Area 1 2 * * * * * * * 10 11 12 * * [15] 16 * 18.
South limit in Cornwall, Devon, Sussex.
North limit in Orkney.
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—60. Atlantic (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, in Humber.
Range of mean annual temperature 52—46.

Native. Rupestral, Sylvestral. Much ink has been shed, much paper has been printed over, and considerable diversity and collision of opinion have been shown, on the specific distinctness, correct nomenclature, and localisation of this fern. It is now generally admitted for a true species in the opinions of British botanists, and its localities are gradually extending so as to include a much wider area than was at first supposed. I have gathered it in Cornwall, where it is abundant, and was originally recorded by the Rev. W. T. Bree. The Rev. W. S. Hore and others find it in Devon. The Rev. W. H. Coleman lately discovered it in Somerset. It has long been in my herbarium, from the neighbourhood of Tonbridge Wells, Sussex side, collected there in 1833 by Sir W. C. Trevelyan, and labelled (after the British Flora) Aspidium spinulosum. Mr. J. T. Syme has this year (1851) given

me a specimen brought from Hoy Hill, Orkney, by Mr. Anderson. I likewise received two specimens from the Botanical Society of Edinburgh some years ago; one of these is labelled "Aspidium spinulosum," and is stated on the label to have been communicated by Mr. C. E. Broome, in 1838, from Hastings, Sussex; the other is labelled "Aspidium spinulosum var. dilatatum," and stated to have been communicated by Mr. J. Ward, in 1839, from Richmond, Yorkshire. As I am informed by Mr. Newman, that the fern grows on hills about Settle, in the same county, perhaps the locality of Richmond may be trusted as correct. The Rev. George Pinder found this fern in Cumberland. Mr. Hort tells me that he has seen a specimen from Arran. It has further been seen in several spots around Embleton, in Northumberland, by Mr. Robert Embleton (Reports of the Berwick Club, p. 357), who assures me that he has no doubt respecting the correctness of the name. In the Flora of Forfarshire, we are told that the same fern has been found in the woods of Baldovan, Kinnordy, &c., but is not common in that county. It has been reported to me that Professor Balfour brought a specimen from North Uist, with a reference by my informant to the published 'Account of the Vegetation of the Outer Hebrides'; where, however, I do not find any mention of L. fœnisecii. Thus, this fern appears to be already known in numerous localities, in nine or ten counties, and in seven or eight provinces. I have added largely to these in the provincial and comital estimates, on the presumption that it will be found in the intermediate provinces and counties; among which Wales and the West Lowlands would seem very probable habitats.

1393. ATHYRIUM FILIX-FŒMINA, *Roth.*

Area general.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Shetland, Orkney, Hebrides.

Estimate of provinces 18. Estimate of counties 82.

Latitude 50—61. British type of distribution.

A. A. regions. Inferagrarian—Inferarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 550 yards, or upwards, in East Highlands.

Range of mean annual temperature 52—41.

Native. Sylvestral, Rupestral, &c. A very general fern, seldom confounded with anything else. The discovery, however, that Polypodium alpestre is a native of the Highland mountains, and had been found and dubiously labelled "Asp. Filix-fœmina" some years ago, will now suggest doubts about the true upper limit of the Athyrium Filix-fœmina, which accordingly is here given lower than my notes would otherwise indicate. For a fern which is so thoroughly an example of the British or general type, the Athyrium is remarkably impatient of frost; old fronds early in the autumn, equally as the young fronds late in the spring, being seared and destroyed by even slight frosts, such as scarcely affect several of the Calceolariæ, Salviæ, Pelargonia, and other greenhouse plants. In the 'Appendix to the Phytologist for 1851', Mr. Newman distinguishes this into four species,—ovatum, molle, incisum, convexum. The three latter are familiar and passably well marked varieties, perhaps even species. The first of the four is the Athyrium Filix-fœmina var. latifolium of Babington's Manual. To my eyes it appears more correctly to be designated a casual variation, or even mon-

strosity, than a variety. On seeing fronds of it in the herbarium of Sir W. J. Hooker, I wrote this opinion of them to Mr. Newman, and was not sorry to find shortly afterwards (Bot. Gaz. iv. 155) that Mr. Hort had arrived at a very similar conclusion, independently, and on an actual inspection of the living plant in its native station; for it seems there is now only one root left, although it is stated that there were two roots originally. We might soon multiply our botanical species ten-fold, if it were admissible to make species on single plants in an abnormal condition of health or luxuriance. The fact seems to me, that there is a tendency in several of our species of ferns to assume that widened and somewhat irregular development of parts which distinguishes this A. latifolium or ovatum. Cystopteris Dickieana bears the same physiological relation to C. fragilis or dentata. My few small fronds of Polypodium alpestre, gathered in Scotland, particularly the one from Canlochen, exhibit that abnormal form in the widened and flattened rachis, the broad and approximate pinnæ and pinnules, almost overlapping each other; a peculiarity that interfered to prevent me from identifying the Scottish specimens with a continental example of P. alpestre in my herbarium, and which is extremely like a large ordinary frond of Athyrium Filix-fœmina or incisum. Perhaps, the Lastrea cristata and uliginosa may be deemed in some degree corresponding variations of L. spinosa, though here rather regular varieties than irregular monstrosities. While something of the same kind may be seen quite normal and regular in the barren fronds of Blechnum boreale and Allosorus crispus.

ATHYRIUM FONTANUM, "*Presl.*"

Area [* * 3 * * * * 8 * 10 * 12 * * 15].

Incognit. Said to have been found by Mr. Bradney, a botanist of last century, on the walls of Amersham church, in the county of Bucks, and to have been brought thence to Kew gardens. It no longer exists on the church; having been destroyed there, as supposed, by white-washing the walls. To that station Hudson (Flora Anglica) adds more vaguely, and without personal authority expressly cited, "in locis saxosis, prope Wybourn in Westmorlandia". These are far from satisfactory evidences in proof of the existence of this species as a true native of Britain. More recent botanists have reported it from other counties; but in some of these instances the plant shown has proved to be A. Halleri, a variety or possibly second species, cultivated in various gardens under name of A. fontanum. To those botanists who may be curious in tracing out the more modern authorities, the following enumeration of the few counties reported, with references, may be of some assistance:— Surrey (Mr. C. Wood, on wrapper of Phytologist, June, 1851), Derby (Mr. Silvanus Thompson, in Phytol. i. 1081), York (Mr. Samuel Gibson, in Phytol. i. 452; also Mr. R. M. Redhead, in Phytol. i. 1084), Cumberland (Hutchinson, quoted in B. G., and Winch Contrib.), Kincardine (Rev. W. T. Bree, in Phytol., but referring to "Mr. David Hutcheson, gardener"). It is to be feared that we have at present only garden plants, or errors of name, as the data for deeming A. fontanum a British species.

1395. ASPLENIUM VIRIDE, *Huds.*

Area * * * * 5 6 7 8 9 10 11 12 13 * 15 16 17.
South limit in Glamorgan, Worcester, Stafford, Derby.
North limit in Sutherland.
Estimate of provinces 12. Estimate of counties 30.
Latitude 51—59. Highland type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to 100 yards, less or more, in Severn.
Ascends to 950 yards, in East Highlands.
Range of mean annual temperature 48—38.

Native. Rupestral. Rather frequent in some of the mountainous provinces, especially the Scottish Highlands. Extremely local in the province of Severn; but reported on good authority as growing on Ham Bridge, near Clifton on Teme. I am not aware of the altitude of that bridge above the sea, but suppose it trifling. The station brings down the descending range of the species into the midagrarian zone, if not more strictly even within the inferagrarian zone, Dovedale, one side of which is in Staffordshire and the other in Derbyshire, may be a second locality in the Severn province, by adhering to county boundaries, although more naturally it is a portion of the Trent province. There is still one alleged outlying locality south-eastward of the limit above indicated; the species having occurred sparingly in the crevices of the crags at Beacon Hill, Charnwood Forest, Leicestershire, according to Pulteney; but I am not aware that this locality has been verified by any botanist since the time of that historian.

1396. ASPLENIUM TRICHOMANES, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 650 or 700 yards, in North Wales.
Range of mean annual temperature 52—42.

Native. Rupestral. Perhaps seldom found above the agrarian region; gradually giving place to its very near ally, the A. viride, on the acclivities of the mountains. A specimen is in my herbarium, from Fullerton, Forfarshire, which approximates to the larger and more austral species, A. anceps. Indeed, if A. viride and A. anceps had been the commoner species, well-known and named before A. Trichomanes was discovered, this last would have stood good chance of being pronounced an intermediate and perhaps uniting variety.

1397. ASPLENIUM MARINUM, *Linn.*

Area 1 2 * * * 6 7 * 9 10 11 12 13 14 15 16 17 18.
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Orkney, Hebrides.
Estimate of provinces 14. Estimate of counties 40.
Latitude 50—60. Atlantic type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends, at the coast level, to North Isles.

Range of mean annual temperature 52—46.

Native. Littoral, Rupestral. A maritime species, that is also found occasionally some few miles inland, as in Lancashire and Berwickshire. The western, or rather oceanic, tendency of this species being obvious, it is referred to the Atlantic type, notwithstanding its occurrence in several of the eastern provinces. Between Sussex and Yorkshire, on the eastern side of England, I am not able to give any station for it. One only is reported on the coast of Yorkshire, and very few in the province of Tyne. It is less rare on the eastern coasts of Scotland, but still only a local plant there. Mr. Newman was certainly in error when he wrote of A. marinum that "in Scotland it is of common occurrence, *particularly along the eastern coast.* The coast of *Aberdeen, Fife* and Berwickshire may be particularly noticed" (Hist. p. 278). Perhaps this may be true of Berwick, and might be extended to Kincardine; but the words here quoted in italics are not so. The Edinburgh Society's Catalogue takes in the plants of both sides of the Firth of Forth, in Fife and Lothian, and this fern is marked "rare". Three localities only are given in the Flora of Forfarshire. In the Flora Abredonensis (unless "Cove" is within that county, not in Kincardine) not a single Aberdeenshire station is given. One locality is mentioned in the Flora of Moray. And Mr. Stables has sent me a specimen from the east coast of Ross, "parish of Nigg". On the western side of Scotland, the botany of which has been much less fully explored, A. marinum is reported from Kirkcudbright, Wigton, Ailsa, Arran, Cantire, Isla, Staffa, Harris, Shiant; and from several stations in some of these counties or islands. The fact seems to be, that Wales and the South-west of England is the principal

habitat of A. marinum; which stretches eastward along the Channel to Hants and Sussex (single stations in each ?), and northward to Orkney, then descending the eastern coast in diminished frequency to Yorkshire. It is thus essentially Atlantic in its type, but withal so nearly encircling Britain, as to make an approximation to the British or general type. Although more thoroughly a maritime plant, this fern associates well with Scilla verna, Sedum anglicum, and Cotyledon Umbilicus, in its peculiarities of distribution.

1398. ASPLENIUM LANCEOLATUM, *Huds.*

Area 1 2 [3] * 5 6 7 * * [10].
South limit in Cornwall, Isle of Wight, Sussex. [Kent ?]
North limit in Caernarvon or Denbigh. [West York ?]
Estimate of provinces 6. Estimate of counties 10.
Latitude 50—54. Atlantic type of distribution.
Agrarian region. Infera-grarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, or upwards, in North Wales.
Range of mean annual temperature 52—46.

Native. Rupestral. A local plant, but perhaps found in more than ten counties. It is satisfactorily reported from Cornwall (H. C. W.), Devon (Mr. F. H. Goulding !), Somerset (Rev. W. H. Coleman), Sussex (Mr. Borrer), Gloucester (Mr. Thwaites !), Glamorgan (Mr. Gutch), Pembroke (Mr. Edwin Lees), Merioneth and Caernarvon (Mr. Newman). According to Bolton it has been found on a wall in the village of Wharfe, Yorkshire. Mr. Arthur Aikin (B. G.) reported it from Hagmon Hill, Shropshire. And Bobart is quoted (E. F.) for its existence in the north

porch of Adderbury Church, Oxfordshire. Until further confirmed, or verified afresh, these three stations are discarded. Two other counties, Kent and Denbigh, still remain uncertain to me, as I am not prepared to say whether the locality of Tunbridge Wells embraces part of Kent as well as Sussex, nor whether Mr. Wilson's station for this fern, near Llanroost, belongs to Caernarvon or Denbigh; Mr. Newman, likely to be correct, places the station under the former county. Mr. Bennett reports this species at about 700 feet in Merionethshire. The station near Llanroost may be as high, or may be of lower elevation; but until more exactly informed about it, I cannot venture to indicate a higher or lower mean temperature than 46.

1399. Asplenium Adiantum-nigrum, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Orkney, Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 52—41.

Native. Rupestral. The genus Asplenium is wholly omitted from the Flora of Shetland; and as the present species may perhaps be absent from the small county of Huntingdon, I do not estimate the comital census quite to the highest degree. Judging by my notes and recollections it is extremely scarce above the agrarian region.

1400. ASPLENIUM RUTA-MURARIA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Hebrides, Sutherland.
Estimate of provinces 18. Estimate of counties 80 or 75.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 200 yards, or upwards, in England.
Range of mean annual temperature 52—46.
Native. Rupestral. Absent or rare among the Highland mountains, even down in their low glens and valleys; but it belongs to the superagrarian zone by its occurrence in the Hebrides, and in the north of Sutherland, on the same level with Arbutus alpina, Dryas octopetala, &c.

1400, b. ASPLENIUM GERMANICUM, *Weiss.*

Area * * * * * * 7 * * * * * * 14 15.
South limit in Denbigh or Caernarvon.
North limit in Perth, Fife, Roxburgh.
Estimate of provinces 3. Estimate of counties 4.
Latitude 53—57. Local (Scot.) type of distribution.
Agrarian region. Midagrarian or Superagrarian zone.
Descends to 100 yards, less or more.
Ascends to 200 yards, more or less.
Range of mean annual temperature, say 46.
Native. Rupestral. Very local; and very sparingly where found. Its few stations are so recorded as to convey no sufficient data for estimating the altitude and tem-

perature. Between Llanroost and Capel Curig, Caernarvonshire (or, possibly Denbighshire), according to Mr. Newman, and Mr. G. H. Smyttan. Rocks about two miles from Kelso, Roxburghshire, according to Dickson, in Hook. Scot. Three miles from Dunfermline, Fife, according to Dr. Dewar, in Brit. Flora. Near Perth, on the authority of Mr. Bishop, in Eng. Flora. And on Stenton Rocks, near Dunkeld, in the same county of Perth, according to Mr. Williamson, in Newman's History, and Dr. Macnab, in Proceed. Bot. Soc. Edinb.

1401. ASPLENIUM SEPTENTRIONALE, *Hull.*

Area 1 * [3] * * * 7 * * 10 11 12 * 14 15 * * [18].
South limit in Devon or Somerset.
North limit in Perth. [Forfar? Orkney?]
Estimate of provinces 7. Estimate of counties 12.
Latitude 51—57. Highland type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to 150 yards, or lower, in East Lowlands.
Ascends to 1000 yards, less or more, in N. Wales.
Range of mean annual temperature 47—37.

Native. Rupestral. Uncertainties attend the limits of this fern both vertically and horizontally. First, does it occur in Devon or in Somerset, or in both? Mr. N. Ward says "within six miles of Lynton, North Devon" (Phytol. i. 21), but Mr. Newman places Mr. Ward's locality under the county of Somerset, "near Glenthorne, about six miles from the boundary of Devon". If in Somerset, the locality would thus be far more than six miles from Lynton; the latter being some miles within the Devon side of the boundary. A second locality is referred to Somerset, in Turner and Dillwyn's Guide; namely,

"Rocks on the south side of Blackford Hill, plentifully—Mr. Brown." I presume this station to be truly the Blackford Hill, near Edinburgh. On the north side of Bocton Hill, Kent, according to Jacob, in 'Plantæ Favershamienses', which is doubtless an error. In Orkney, according to Lowe's List, and in Forfarshire, according to G. Don; not improbable habitats, but unverified. The counties of Caernarvon (Mr. J. E. Bowman), Denbigh or Caernarvon (Mr. Newman), York (Mr. Tofield—Mr. Backhouse), Northumberland or North Durham (Mr. E. C. Atkinson — Mr. John Storey!), Westmoreland (Huds. Ang.), Cumberland (H. C. Watson), Roxburgh (Rev. James Duncan), Edinburgh (H. C. Watson, &c.), Perth (Mr. Gardiner!), may probably all be correct. Ascends to the summit of Carnedd Llewelyn, according to Llwyd quoted by Hudson, &c., which would give it an altitude of 1150 yards; but "summit" may likely mean the rocks much below the actual and extreme top of the hill.

1402. SCOLOPENDRIUM VULGARE, *Sym.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Sylvestral, Rupestral. This fern affords a very decided example of one prevalent condition of distribution which may be traced in the greater number of

British plants, though seldom so strongly marked as in the present instance; namely, the tendency of plants to linger along the coast line to a higher northern latitude than that at which they will exist in inland situations. There are some exceptions to this tendency among British plants, and still more among those of continental countries; especially with annual species, the existence of which depends more on the temperature of summer, than on that of the year or of the winter. The Scolopendrium is not a maritime species, and yet all its recorded stations in the northern provinces appear to be on or near the coast line. I never met with it inland in the glens or valleys of the Highlands, the humid climate and sheltering rocks of which would seem to be well adapted to its growth, and of which the general vegetation is similar to that of Orkney and Shetland, where the Scolopendrium is recorded as still found. The northern limit of the same fern more to the eastward is also insular, avoiding the Scandinavian Peninsula, but taking in one or more of the islands of the Baltic, according to the Summa Vegetabilium.

1403. Blechnum boreale, *Sw.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 1200 or 1300 yards, in East Highlands.
Range of mean annual temperature 52—31.

Native. Ericetal. One of the few ferns that thrive as well or better in open and exposed situations, while the great majority are more particularly adapted to the shade of woods, or to the more partial shelter of steep banks and rocks; in which respect this fern is allied to Pteris and Allosorus, as it is also to the latter by the differences of barren and fertile fronds. If wholly absent from Huntingdon or Buckingham, for which I have no authority to cite, the comital estimate must be kept below 82. Eleven other counties, for which I am equally unprepared to cite authorities, are so extremely probable as to be all unhesitatingly reckoned in the estimate. Taking both horizontal and vertical range into account, this is perhaps the most widely distributed of all our ferns; Lastrea dilatata being its nearest ally or rival in this respect.

1404. PTERIS AQUILINA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends nearly to 650 yards, in East Highlands.
Range of mean annual temperature 52—40.

Native. Ericetal, Sylvestral. Some remarks on the altitude attained by this fern in Scotland, have been before given (vol. i. pp. 33—4). Actually, its upper line, traced on the acclivites of the mountains, exceeds that of cultivation in some places; and thus, if measured by the test of cultivation strictly, the Pteris should be considered

as slightly ascending into the inferarctic zone. Its upper limit on the southern and eastern declivities of the Grampians, may average about 500 yards; but on the perfectly open and exposed moors, exclusively of woods and sheltered ravines, the average line would very likely be as low as 400 to 450 yards.

1405. ADIANTUM CAPILLUS-VENERIS, *Linn.*

Area 1 * * * [5] 6 * [8] * [10] * 12 * * [15 16].
South limit in Cornwall, Devon, Somerset?
North limit in Isle of Man, Glamorgan.
Estimate of provinces 3. Estimate of counties 5.
Latitude 50—55. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends scarcely above the coast level.
Range of mean annual temperature 52—49.

Native. Rupestral. Specimens are in my herbarium from Cornwall (Rev. J. S. Tozer), Devon and Glamorgan (Bot. Soc. London). There can be no question about the growth of this species in the Isle of Man. (See letters from Mr. F. F. Clark, and Mr. T. G. Rylands, in Phytol. i. 90 and 150). Some other habitats on record are insufficiently certified or positively erroneous. "Said to grow at the mouth of an old well at Clevedon", Somerset (Mr. L. H. Grindon, in Phytol. i. 964). In Dovedale, Stafford or Derby, according to "Mess. Butt and Forster, Corresp. of Sir. J. Smith: not there now" (Garner, Nat. Hist. Staff.). Also in the Peak of Derbyshire, in 1844, according to Mr. H. E. Smith, but afterwards shown to be an error (Phytol. iii. 11 and 449). Banks of the Carron, a rivulet in Kincardineshire, (Prof. Beattie, in Eng. Flora);

doubtless an error. "Isle of Arran, Galloway" Scotland, substituted by an error of geography or typography, for the Isle of Arran, Galway, Ireland. "Ilfracombe, York" (Comm. N. B. Ward.—Bot. Soc. Edinb.), but this doubtless intends the Devon locality. [This blunder of the county, in the case of one botanical Mr. Ward, for some years left me in suspicion that the Yorkshire habitat for Lastrea fœnisecii, on authority of the other botanical Mr. Ward on a label from the Edinburgh Society, might also be a counterpart blunder of the county, York for Devon, in the case of a south-western species not then ascertained to occur so far north as Yorkshire. See L. fœnisecii for explanation.]

1406. TRICHOMANES RADICANS, *Sw.*

Area [10].

Hibernian. Incognit in England. Long supposed, with more or less of confidence, to have been found wild in Yorkshire. For a clear account of the grounds for belief or disbelief in the matter, I cannot do better than refer to Newman's History of British Ferns, pp. 306—8. That the Irish plant is the T. speciosum (Willd.) of Madeira and the Azore islands, seems perfectly clear and settled. But I am not by any means so well convinced that it is also identical with the T. radicans (Swartz) of the West Indies, to which it is referred by Sir William Hooker. Mr. Newman holds them distinct, and if relying on the opinions of other men, I should prefer that of Mr. Newman in a question about British Ferns. T. Andrewsii, of Ireland, is a more elegant and elongated state, but with very small claim to distinction as a species. In general, the Hibernian examples appear to me much

smaller than I was accustomed to meet with in the Azore islands, where this fern occurs in numerous places, and also varies much in size.

1407. HYMENOPHYLLUM TUNBRIDGENSE, *Sm.*

Area 1 2 3 [* 5] 6 7 * 9 10 * 12 13 [14 15] 16 [17].
South limit in Cornwall, Devon, Sussex, Kent.
N. limit in Mull (J. T. Syme), Dumbarton (W. Gourlie).
Estimate of provinces 10. Estimate of counties 20.
Latitude 50—57. Atlantic type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 400 yards, more or less, in same province.
Range of mean annual temperature 52—47.

Native. Rupestral. As the name of "tunbridgense" was originally used to include both the present species and its close ally H. Wilsoni, the older records of localities cannot certainly be assigned to either one apart from the other, until the stations shall have been again verified. The counties that would be temporarily rejected on this ground are too numerous to be quoted with their authorities. Those of Cornwall, Devon, Somerset, Sussex, Kent, Glamorgan, Merioneth, Lancaster, York, Lake-Lancaster, Dumfries, Dumbarton, Argyle, are all authenticated by recent observers, competent to apply the specific names correctly. H. tunbridgense will likely be found in many other counties; but I have not ventured to increase the estimate of provinces beyond the ten represented by the thirteen counties enumerated. Type of distribution intermediate between Scottish and Atlantic; or, perhaps, really between Highland and Atlantic.

1408. HYMENOPHYLLUM WILSONI, *Hook.*

Area 1 * * * 5 6 7 * 9 10 * 12 13 14 15 16 17 18.
South limit in Cornwall, Devon.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 13. Estimate of counties 40.
Latitude 50—61. Highland type of distribution.
A. A. regions. Midagrarian—Midarctic zones.
Descends to the coast level, in West Highlands.
Ascends to 950 yards, in Hebrides (Balf. & Bab.).
Range of mean annual temperature 49—37.

Native. Rupestral. Ascertained in 26 counties, and doubtless reported for others under name of H. tunbridgense. I have seen this species in North Wales, at heights ranging from 650 to 2000 feet; and in the West Highlands, from the level of Loch Lomond, not much above the sea, to perhaps 1500 feet on the acclivities of Ben Nevis. By Balfour and Babington it was observed on the summit of Langa, in Harris (Cat. Heb. p. 23), and they give fair grounds for estimating that hill at upwards of 2700 feet (Cat. Heb. p. 8), although its altitude has not been ascertained by admeasurement. As this fern grows on Carn Brea in Cornwall, a hill of about 700 feet, it there descends nearly or quite within the inferagrarian zone, and may be more clearly within the same zone elsewhere. According to modern records; this species would seem to be more boreal and alpine than the other; and though still preserving something of the western tendency, its type is on the whole nearer to the Highland than to the Atlantic. It rather descends than ascends the western side of Britain. Occurs in Faroe, and locally in Norway. "In Ireland this fern is much more common than in

England, and grows with a beauty and luxuriance that I have not witnessed elsewhere: it is more generally distributed over the island than *tunbridgense*" (Newman's History).

1409. OSMUNDA REGALIS, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 * 15 16 17 18.
South limit in Cornwall, Isle of Wight, Sussex.
North limit in Shetland, Hebrides.
Estimate of provinces 17. Estimate of counties 60.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Paludal, Sylvestral. The number of counties in which this very conspicuous fern has been recorded or observed, according to my compilation of notes, scarcely exceeds 50; and in two or three of these (example, Middlesex and Cambridge) it would seem to have become extinct. Several other counties (example, Cardigan and Ayr) would appear very likely to produce it; so that an estimate of 60 may eventually be found nearer truth than 50 would be. Decidedly more western than eastern in its census. In the pamphlet on Ferns, published by Mr. Newman, as an 'Appendix to the Phytologist for 1851,' it is stated that "in addition to the descriptions and synonymes, the geographical range of the species in Britain is also given." All that is said on the "range" of this species is comprised in four words, "Wet places, very local." These four words read to me simply as an item of mis-information in regard to the area and census

of the fern; and they convey no information about its *range*, whether of latitude, longitude, altitude, or temperature. A fern which is known to occur in 17 out of 18 provinces, and the latitudinal range of which extends from Cornwall to Shetland, cannot be very local.

1410. Botrychium Lunaria, *Sw.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney.
Estimate of provinces 18. Estimate of counties 75.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula?
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 50—38.

Native. Ericetal. Ascertained in about 60 counties, and likely to be found in many of the rest. Still, the estimate of 75 counties may seem high to the metropolitan botanist, for a plant so little frequent in the province of Thames, Channel, or Ouse. In proportion to its area and comital census, indeed, it is an infrequent British plant, although probably found in several hundred distinct stations. I cannot say that I have any where seen the Botrychium really common or abundant, in the sense in which we should apply those much-used terms to the Pteris, Blechnum, Bellis, Anthoxanthum, Hydrocotyle, or Narthecium.

1411. Ophioglossum vulgatum, *Linn.*

Area 1 2 3 4 5 * 7 8 9 10 11 12 13 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney?
Estimate of provinces 17. Estimate of counties 70.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—45.

Native. Pratal, Pascual. Ascertained only in about 50 counties; and it would thus appear somewhat rarer than the Botrychium. But the latter is perhaps more usually recorded, if observed; because it grows more away from the inhabited tracts than the Ophioglossum, and thus appears a greater rarity to collectors. Again, the Ophioglossum is more liable to be overlooked among grass and other herbage, than are the divided fronds of the Botrychium. The census of their distribution is in the opposite direction; the Ophioglossum decreasing in frequency northward, the Botrychium decreasing southward.

Onoclea sensibilis, *Linn.*

Area (9 10).

Alien. Said to have been found near Warrington and in the north of Yorkshire (Phytologist i. 492). I think some other locality has been published, but do not recollect where. The fern is a native of North America.

1412. LYCOPODIUM CLAVATUM, *Linn.*

Area general.
South limit in Devon, Dorset, Hants, Sussex.
North limit in Orkney. [Shetland.]
Estimate of provinces 18. Estimate of counties 60.
Latitude 50—60. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to 50 yards, less or more, in Thames.
Ascends to 650 yards, in East Highlands.
Range of mean annual temperature 49—41.

Native. Ericetal. Too widely distributed to be assigned to the Scottish type, in preference to the British; but approximating to the former by its greater frequency on the ericetal and pascual declivities of the northern and mountainous provinces. It ascends but little within the arctic region. According to Mr. Newman (Phytologist i. 34) a specimen from Shetland, labelled as L. clavatum by Mr. Edmondston, was truly L. alpinum; and this early error on the part of Mr. Edmondston is virtually admitted by himself, in the omission of L. clavatum from his published Flora of Shetland; although I do not know that he had a sufficient love of scientific accuracy, expressly to point out and correct this error of his first list.

1413. LYCOPODIUM ANNOTINUM, *Linn.*

Area * * * * * * 7 * * * * 12 * * 15 16 17 18.
S. limit in Caernarvon, Cumberland or Westmoreland.
North limit in Orkney.
Estimate of provinces 6. Estimate of counties 12.

Latitude 53—60 (59). Highland type of distribution.
A. A. regions. Superagrarian—Midarctic zones.
Descends to 50 yards, in West Highlands (Syme).
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 46—37.

Native. Ericetal. Mr. J. T. Syme estimates the lower altitudes at which he has found this species, at about 200 yards in Hoy, and at 50 yards in the Isle of Mull. It has been before remarked in this work (vol. i. p. 60) that all the species of Orkney, not extending to Shetland, are considered to cease between the lines of 59 and 60 north latitude, as the ready mode of separating those that attain to Orkney, from those that cease in Sutherland or Caithness. But as some of the Orkney plants, especially the few mountain species found only on Hoy Hill, may not pass the line of 59, this indication of the higher latitude may in some instances be mathematically erroneous. Lycopodium annotinum is a species likely to be thus carried one degree too far northward; being at present known only on Hoy, although it may possibly occur on some of the more northerly islets of Orkney.

1414. LYCOPODIUM INUNDATUM, *Linn.*

Area 1 2 3 4 5 * * 8 9 10 * 12 * * 15 16 17.
South limit in Cornwall, Dorset, Sussex, Kent.
North limit in Ross, Moray, Forfar? Perth?
Estimate of provinces 12. Estimate of counties 40.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula?
Ascends to 200 yards, or upwards, in England.
Range of mean annual temperature 51—46.

Native. Ericetal. Next to L. annotinum this is the rarest British species of its genus. Irregularly distributed; and perhaps on the whole more nearly related to the English than to the British type of distribution; though its existence to the northward of the Grampians, in Moray and Ross, has led to the indication of the more general type above. The authorities for Perth (Dr. Parsons, in Lightf. Scot.), and Forfar (Mr. Reid, in Flo. Forf.) are unsatisfactory; and yet not to be rejected in the case of a species clearly ascertained to ascend to the more northerly counties before mentioned. Is there no locality for this Lycopodium in Wales or the Scottish Lowlands? Mr. Newman writes, "in Scotland and Wales it is of comparatively rare occurrence." But where in Wales does it occur? My herbarium has specimens from Moray (Mr. W. A. Stables!), and Dunbarton (Mr. H. M. Balfour!), and also from many English counties. Grows within 100 feet of the sea level in Surrey, but I cannot certainly say this of the Channel or Peninsula provinces.

1415. LYCOPODIUM ALPINUM, *Linn.*

Area 1 * * * [5] 6 7 8 9 10 11 12 13 14 15 16 17 18.
South-east limit in Somerset, Derby, York.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 14. Estimate of counties 40.
Latitude 51—61. Highland type of distribution.
A. A. regions. Superagrarian—Superarctic zones.
Descends to the coast level, in East Highlands?
Ascends to 1200 yards, in same province.
Range of mean annual temperature 47—34.

Native. Ericetal. One outlying station for this species, in Somerset, brings it almost within the midagrarian zone;

but as the altitude of the station at Dunkery Beacon, according to a label sent with a specimen of the plant kindly given to me by the Rev. W. H. Coleman, is 1668 feet above the sea, it may be held still in the superagrarian zone for a descending species; although an austral and ascending plant, attaining only to that altitude in a southern and not mountainous province, might scarcely be deemed to exceed the midagrarian zone. The most southern point at which this species descends to the coast level, is not known to me. In the Flora Abredonensis two stations are given which may be thus low:—"At the corner of the fir wood near New Church of Nigg; and near Bay of Nigg." But under L. Selago, in the same Flora, is the locality of "*Hills* at Nigg," &c.; and thus, it seems not unlikely that L. alpinum may there be on a hill and possibly at an elevatian too high to be designated "coast level." The Rev. W. A. Leighton marks the name of this species among plants reported to occur in Shropshire, but not seen in the county by himself; and I know not the authority. Mr. Newman has seen specimens of L. Selago, from that county, mislabelled L. alpinum.

1416. Lycopodium Selago, *Linn.*

Area general.
South limit in Cornwall, Dorset, Hants, Sussex.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 70.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Superarctic zones.
Descends nearly to the coast level, in Ouse.
Ascends to 1440 yards, in East Highlands.
Range of mean annual temperature 48—32.

Native. Ericetal, Rupestral. A scarce plant in the four or five first provinces, but so frequent on the mountains and moors of Scotland, north of England, and Wales, that it may be accounted the commonest species of its genus in Britain. And it has certainly the widest distribution, taking into account its vertical range as well as its horizontal area. I suppose that "Holt and Felthorpe," in Norfolk, indicated for this species by Mr. S. P. Woodward and older authorities, are but little above the coast level. The altitude of 1440 yards is intended for the summit of Ben-na-muic-dhu, in Aberdeenshire. The species occurs also up to 4000 feet on Ben Nevis. The wide area refers this species to the British type, while its greater frequency on the northern mountains and moors would otherwise connect it with the plants of the Highland type.

1417. LYCOPODIUM SELAGINOIDES, *Linn.*

Area [1] * * * * * 7 8 9 10 11 12 13 14 15 16 17 18.
South limit in Caernarvon, Chester, Derby, York.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 12. Estimate of counties 40.
Latitude 53—61. Highland type of distribution.
A. A. regions. Midagrarian—Superarctic zones.
Descends to the coast level, in Mersey.
Ascends to 1100 yards, in East Highlands.
Range of mean annual temperature 48—36.

Native. Uliginal, Rupestral. Occurs in nearly all the counties of the ten most northerly provinces. For Trent I am still unprepared to adduce any recent verification of the Derbyshire locality, "on Kinderscout", recorded in the Botanist's Guide, on authority of Mr. O. Simms; but

it is probable enough. I have only one note of a station above 950 yards; namely, close under the summit of one of the Breadalbane peaks which I estimated at nearly 1100 yards.

† LYCOPODIUM HELVETICUM, *Linn.*

Area [1 * 3].

Incognit. The Rev. W. W. Spicer has recently suggested or revived a question, "respecting the occurrence of Selaginella helvetica in Britain", in a letter of inquiry to the readers of the Phytologist. I fear that the introduction of specimens of this plant into some old herbaria, will afford only another of the many evidences of that carelessness or indifference about the true habitats and localities of plants, which characterized botanists before the present century, and even still does characterize many of those now living.

1418. ISOETES LACUSTRIS, *Linn.*

Area * * * * [5] 6 7 * * 10 11 12 * * 15 16 17.

South limit in Brecon, North Wales, York.

North limit in Sutherland, Skye, Aberdeen.

Estimate of provinces 8. Estimate of counties 20.

Latitude 52—59. Highland type of distribution.

A. A. regions. Midagrarian—Inferarctic zones.

Descends nearly to the coast level, in Lake province.

Ascends to 500 or 600 yards, in East Highlands.

Range of mean annual temperature 47—41.

Native. Lacustral. Occurs in many lakes among the mountainous tracts; but how high up the mountains I am

not prepared to say with certainty. There is a vague intimation of its occurrence much higher than I have indicated above; namely, "in Ffynnon frech, a small lake *near the top* of Snowdon". The counties of Salop (Mr. Griffith, in With. Arr.) and Glamorgan (Mr. Moggridge, in Dillw. Mat.) have been reported for the Isoetes; but possibly the Littorella may have been mistaken for it, as in some other instances within my knowledge. Mr. Syme has shown me specimens of Littorella, labelled as Isoetes, which were sent to the Botanical Society of London so lately as December, 1851. The counties above mentioned for the south and north limits, together with Merioneth, Caernarvon, Denbigh, Northumberland, Westmoreland, Cumberland, (Fife ?), Stirling, Perth, Forfar, Dumbarton, and Argyle (Bute), rest on good authority.

1419. PILULARIA GLOBULIFERA, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15 16 17.
South limit in Cornwall, Dorset, Hants, Sussex.
North limit in Sutherland.
Estimate of provinces 17. Estimate of counties 50.
Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 300 yards, in North Wales.
Range of mean annual temperature 52—45.

Native. Lacustral, Uliginal. Though widely spread, this is somewhat thinly scattered in Britain, if we trust entirely to the published records. But a plant so inconspicuous in itself, and so frequently submersed, is doubtless often overlooked; and hence I assume that the actual records of its occurrence in scarcely 40 counties will be

found considerably below the fact. As with the case of the Isoetes, the single or few known stations in Sutherland may possibly not be on the northern side of 58 latitude. The Rev. W. W. Spicer found it growing submersed in a lake near Guildford, where the water was forty inches deep (Phytol. iv. 350).

1420. EQUISETUM TELMATEIA, *Ehrh.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 * [18].
South limit in Cornwall, Isle of Wight, Kent.
North limit in Aberdeen or Kincardine ? Forfar, Argyle.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Uliginal, &c. In most English counties, but apparently in few Scottish. In Flora Abredonensis, the most northern list in which I find this species mentioned (except Orkney, which I fear to rely upon), its habitat is curtly given thus:—"Loch of Drum, &c. Not unfrequent." The Loch of Drum is in that small portion of Kincardineshire which is situate on the northern side of the river Dee; and thus it does not clearly appear whether E. Telmateia actually grows within the limits of Aberdeenshire or not so. Moreover, I confess some suspicion that the "E. fluviatile" (or "Great Water Horsetail") of the Flora Abredonensis may truly be the branched state of E. limosum, although at its date of publication (1838) the name of "fluviatile" was usually applied to the species

now under consideration; and the English name added also implies this species.

[*Controversial on the places of growth.*—In Phytologist, vol. i. pp. 532—3, Mr. Newman wished to show that the Linnean name of Equisetum fluviatile applied to the branched form of E. limosum, and not (as then incorrectly supposed by British botanists) to the species now under consideration. Among other reasons adduced, he contended that a positive proof was afforded in the idea expressed by Linnæus, of the larger size and altered appearance of his fluviatile being caused "by its growing from the bottom of deep water: this is the case," continues Mr. Newman, "with Smith's limosum, but never with his fluviatile, which, on the contrary, affects loose gravelly and sandy places *unconnected with water*". These are the words of Mr. Newman, but the change of type is my own, in order to fix attention on the unqualified assertion. When objecting against Mr. Newman's transfer of the name fluviatile, so as to substitute it in the stead of limosum, I added also a paragraph (Phytol. i. 588) on the above statement, commencing with these words:—"There is a *partial* inaccuracy in the statement that Equisetum fluviatile affects loose gravelly and sandy places unconnected with water"; then proceeding to say that I had seen the species in corn-fields and other places out of water, but had also seen it by the sides of streams, and in water with a deep muddy bottom. My counter-statement was subsequently much perverted and misrepresented by petty writers in the Phytologist. And even by the Author of the History of British Ferns, who is usually fair and candid enough in argument, I was treated with scant justice in this instance. Accordingly I shall here put a reply on record, likely to be quite as permanent as the erroneous representations will prove. The question was

transferred from the Phytologist to the History, where the Author constituted himself the advocate against me, and stated the case considerably different from the terms in which it would have been stated by myself. He there represents himself to have said that the plant was "generally" [no such term of qualification was used originally] found in places unconnected with water, and he quotes only that portion of my paragraph in correction, which mentions having seen it in water and mud, omitting the coincident statement that I had seen it in corn-fields, &c. Thus, to readers of the History, it appears that Mr. Newman had originally described the species as growing in dry *or* other places, and that I had then contradicted him, by limiting the species to water, or something very like this. By this wrong mode of putting the case, any record of a station in dry or merely damp ground was made to appear a fact subversive of my supposed statement; and such records are accordingly quoted from the pens of some insignificant botanists. The fact is, I corrected the original remark of Mr. Newman only in part ["partial inaccuracy"] and in so far as it implied the *non*-occurrence of the plant in or by water. After quoting the reports of other persons, the Author of the History proceeds to say, "The more closely I investigate the subject the more do I feel strengthened in my original view of the case, confessing, however, that my means of judging are confined to two or three localities," &c. Now, be it kept in memory, that Mr. Newman's original view *dis*-connected the plant from water, without any exception expressed. But this able Pteridologist, having very highly complimented the writings of Dr. Bromfield, as published in the Phytologist, cannot consistently refuse his evidence. Dr. Bromfield was perfectly aware of the discussion that had arisen on the subject, at the time when he penned for the

Phytologist the following description of the places of growth of Equisetum Telmateia, evidently summed up from far more than "two or three localities"; namely, "in marshy or boggy or shady places, wet thickets, hollows, by river sides, &c.; frequent over the Isle of Wight and rest of the county". Every experienced botanist will recognize the correctness of that description. Even Mr. Newman, contending for the accuracy of the name, may be cited against Mr. Newman, trying to support his partially impeached statement. On pages 72, 73, of the History, he says that the name Telmateia signifies "growing in mud," and is applicable to this species. No doubt it is applicable. The species frequently grows in swampy and muddy places, or in hollows holding water at least some part of the year; although it will also grow in places of a much drier character.

1421. EQUISETUM UMBROSUM, *Willd.*

Area * * * * * * * * 9 10 11 12 13 14 15.
South limit in Chester or Lancaster, York.
North limit in Moray, Aberdeen, ——— ?
Estimate of provinces 8. Estimate of counties 20.
Latitude 53—58. Scottish type of distribution.
Agrarian region. Midagrarian—Superagrarian zones.
Descends nearly or quite to the coast level.
Ascends probably to 200 or 300 yards.
Range of mean annual temperature 47—45.

Native. Inundatal? Not having seen this species in its native stations, I am unprepared to state the range of altitude and temperature properly, or even to apply confidently the term that would best describe its situations of

growth. Mr. Newman informs us, on faith of a specimen gathered by Dr. Young, that E. umbrosum grows in Mere Clough, near Manchester; but I cannot certainly say whether that clough is in Cheshire or Lancashire. The other counties are York (Mr. G. S. Gibson!), Northumberland (Mr. John Storey!), Westmoreland (Mr. James Backhouse), Lanark (Mr. H. M. Balfour!), Linlithgow (Prof. Balfour!), Fife or Ochills (Dr. Dewar!), Stirling (Mr. Gourlie!), Perth (Mr. H. M. Balfour!), Forfar (Mr. Thomas Drummond), Aberdeen (Mr. H. M. Balfour!), and Inverness (Prof. Graham). Will very likely be found in the West Highlands, and perhaps in the North Highlands also.

1422. EQUISETUM ARVENSE, *Linn.*

Area general?
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in East Highlands.
Range of mean annual temperature 52—43.

Native. Inundatal, Agrestal, &c. Perhaps the least affecting watery situations of any of the species of its genus, yet commonly enough found in ditches and hollows where water stands for weeks together in the winter season, and even for months during some wet winters.

1423. EQUISETUM SYLVATICUM, *Linn.*

Area general.
South limit in Devon, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 51—37.

Native. Inundatal, Sylvestral, &c. Less common than E. arvense in England; but I cannot name a county in which the probability of absence exceeds much that of its presence; and thus the comital estimate is entered nearly at the highest number. Its less frequency in England, however, is counterpoised by its greater frequency on the northern mountains, where, much above the agrarian region, its branches become almost simple, and might cause it to be mistaken for E. arvense or E. umbrosum on a hasty inspection. In England, it seems to grow principally in the shady corners or sides of wet meadows, on banks from which water oozes, and in damp woods, but not in water; while upon the Highland mountains it may be seen in the very beds of the streams, and in places almost paludal in character.

1424. EQUISETUM PALUSTRE, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Midarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 850 yards, in East Highlands.
Range of mean annual temperature 52—38.

Native. Paludal. A variable plant; the small and slightly branched states of which, both alpine and sublittoral, are not distinguished from E. variegatum without difficulty sometimes in determining to which species the individual examples should be referred.

1425. EQUISETUM LIMOSUM, *Linn.*
1425, b. EQUISETUM FLUVIATILE, *Newm.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
A. A. regions. Inferagrarian—Inferarctic zones.
Descends to the coast level, in the Peninsula.
Ascends to 700 yards, in East Highlands.
Range of mean annual temperature 52—39.

Native. Paludal. Some slight degree of uncertainty attaches to the highest station for this species; namely, in the small loch (Ceandu ?) below the original Aberdeenshire station for Carex Vahlii, and full 700 yards above the sea. I find no other station mentioned among my notes that is within 200 yards of that altitude; and having brought away no specimen, it seems not very improbable that I may have inadvertently entered the wrong specific name in my note-book. That small loch is so embosomed among the mountains, that the vegetation around it, even at little more than 700 yards, already assumes almost the midarctic character; Hieracium alpinum, for example, growing on the stony heath close at hand.

Equisetum fluviatile of Newman, excluding the unbranched form, or E. limosum, is said not to be identical with the Swedish species so named by Fries; (See Bab. Man. ed. 2, 3.) The E. fluviatile of English botanists, until quite recently, intended E. Telmateia; now, the name may be said to mean the branched state of E. limosum; scarcely a variety, because passing so very gradually one into the other.

1426. EQUISETUM HYEMALE, *Linn.*

Area [1 2] 3 4 5 6 7 8 9 10 11 12 13 14 15 * 17.
South limit in Surrey, Glamorgan, ——— ?
North limit in Ross, Moray, Aberdeen or Kincardine.
Estimate of provinces 14. Estimate of counties 30.
Latitude 51—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends nearly to the coast level, in Thames.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 49—46.

Native. Paludal. Much suspicion attaches to several of the stations on record for this species. The specimens in my herbarium are from Surrey (Mr. J. D. Salmon), Leicester (Rev. Churchill Babington), Northumberland (Mr. R. B. Bowman), Edinburgh (H. C. Watson), Forfar (Mr. William Gardiner), and Moray (Rev. George Gordon). Among the counties reported, and which more particularly appear to require verification, are those of Somerset, Wilts, Kent, Middlesex, Norfolk, Worcester, Warwick, and Stafford.

1427. EQUISETUM MACKAII, *Newm.*

Area * * * * * * * * * * * * * * 15.

South limit in Kincardine?

North limit in Aberdeen?

Estimate of provinces 1. Estimate of counties 2.

Latitude 57—58. Scottish type of distribution.

Agrarian region. Midagrarian or Superagrarian zone.

Decends ——? (Below 100 yards?)

Ascends to ——?

Range of mean annual temperature, about 47—46.

Native. Inundatal? Mr. Babington gives this in his Manual, as a species found in Ireland, Scotland, and England. I am not aware what are the English localities. According to the Rev. J. B. Brichan, this one and the preceding and following species all occur along the course of the Dee, where it crosses the northern point of Kincardineshire; but whether the E. Mackaii extends up-

wards or downwards into Aberdeenshire, does not clearly appear. Mr. Brichan writes thus:—"The three plants are found at various parts along the course of the Dee, within the parish of Banchory, extending over a space of six or seven miles in length. There are three distinct stations for E. hyemale, four for E. Mackaii, three for E. variegatum, and several intermediate spots in which detached plants of each species or variety, especially of E. Mackaii, occur." (Phytol. i. 370). Has been supposed identical with Equisetum elongatum (Willd.) and ramosum Schl.); but this idea would seem to be now abandoned. (See Brit. Flo. ed. 6, p. 583).

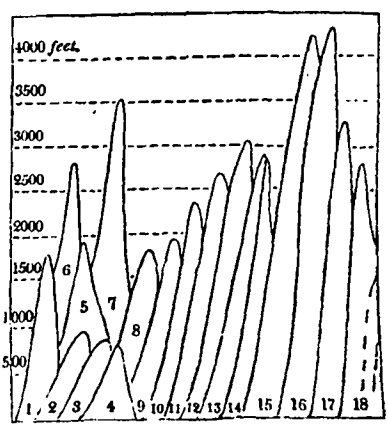
1428. EQUISETUM VARIEGATUM, "*Weber & Mohr.*"
1428, b. EQUISETUM WILSONI, (*Newm.*)

Area 1 * * * * * * * 9 10 11 12 13 14 15 * 17.
South limit in Devon, Somerset?—Chester, York.
North limit in Ross, Aberdeen or Kincardine.
Estimate of provinces 9. Estimate of counties 15.
Latitude 50—58. Scottish type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends nearly to coast level (60 yards), in Peninsula.
Ascends to 200 yards, or upwards, in Tyne province.
Range of mean annual temperature 51—46.

Native. Inundatal, Paludal. Although I possess many specimens of this plant, and have seen it on the coasts of Cheshire and Lancashire, I confess to still finding much difficulty in tracing the distinctive limits of the species. While on the one side, it makes some approach towards E. palustre, in the small littoral and alpine

forms of this latter, on the other side E. variegatum shades off, through Wilsoni and Mackaii, almost to E. hyemale. I am not suggesting that all these should be united into one species; but that the intervening species (one or more), between palustre and hyemale, is not clearly understood by the technical diagnosis hitherto attempted to be drawn. The highest stations for E. variegatum are probably on the line of the Tees, but to what altitude it ascends that river I do not know. (See Phytol. ii. 553 and 576; also Phytol. i. 337, and 369).

Provinces.



Altitude of Provinces.

1. Peninsula.
2. Channel.
3. Thames.
4. Ouse.
5. Severn.
6. S. Wales.
7. N. Wales.
8. Trent.
9. Mersey.
10. Humber.
11. Tyne.
12. Lakes.
13. West Lowlands.
14. E. Lowlands.
15. E. Highlands.
16. W. Highlands.
17. N. Highlands.
18. N. Isles.

(Second Part of Volume Third).

1. ADDITIONAL SPECIES, &c.

THE first volume of this work was written in 1846, and much of it also printed in the same year. Between that date and the early months of 1852, in which this latter portion of the third volume is now printing, several additional species have been discovered in Britain. In other instances, familiar species have been subdivided; so that they now appear in descriptive Floras as two different and distinct species, although formerly described and named as a single species only. The geographical distribution of these added or subdivided species, and also of some other imperfectly treated species that are now better known, will of course require to be shown in the same manner as that of the other species, in order to provide data for any after numerical or statistical summaries, and in order that such summaries may be thus rendered as nearly complete as existing information will allow.

Further, new localities have been ascertained for many other species, which will require some corresponding alterations in their formula of distribution, as set forth in the preceding volumes. And various doubts and questions have been more or less clearly answered and settled by an increase of knowledge bearing upon those points, during the past half-dozen years. These circumstances have rendered it desirable, and almost necessary, to intro-

duce likewise a sort of running commentary upon the two preceding volumes, over and above the addition of the new and subdivided species to be first more formally treated. Accordingly, such a commentary will follow the "Additional Species, &c." in the after part of the present volume.

† RANUNCULUS CONFUSUS, "*Godr.*"

Area 1 * * * 5 6 * * * * 11 * * 14.
South limit in Somerset, —— ?
North limit in Haddington, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 51—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends scarcely, or not at all, above the coast level.
Range of mean annual temperature 50—48.

Native. Lacustral, Sub-littoral. Very closely resembling R. aquatilis, and hitherto doubtless passed over by collectors as one of the varieties of that proteiform species. There are, however, some distinctive characters; and their existence induces me to give the plant a separate formula here, although quite unprepared to show its distribution in a satisfactory manner. My herbarium at present contains specimens from Haddington only, collected by Mr. J. T. Syme. To this county Mr. Babington adds also those of Somerset, Gloucester, Monmouth (Mr. Hort), Pembroke and Durham (Mr. Hort). These distant stations give probability that R. confusus will be found in many intermediate counties along the coast line, and possibly more northward than Haddington.

12. RANUNCULUS TRIPARTITUS, *DC.*

Area 1 * 3 * * 6.
South limit in Cornwall, ——?
North limit in Glamorgan, Surrey, ——?
Estimate of provinces —? Estimate of counties —?
Latitude 50—52. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level.
Ascends to 100 yards, less or more.
Range of mean annual temperature 52—49.

Native. Lacustral, Inundatal. Ascertained only in three counties, as yet; but likely enough to be discovered in others. I have found it in four distinct stations in the neighbourhood of Esher, in Surrey; but very sparing in quantity, and limited to a few yards of ground or water in each instance; its existence and quantity being modified from time to time by the state of the small drains in which it has occurred. Mr. Westcombe sent me a single example which he had brought from Cornwall, and which was unfortunately lost or mislaid, through its accidental arrival at a time when I had a large quantity of foreign plants under arrangement, and among the duplicates of which it was supposed to have been accidentally mingled, and probably sent away to some botanical correspondent abroad. Mr. Babington has found the same species in Pembrokeshire. No capillary-multipartite leaves have been seen in the English specimens, whether found in water of two feet in depth, in water of two inches in depth, or on peaty gravel from which the water had evaporated; in any situation, the leaves are only tripartite, and again cleft, much like the floating leaves of R. aquatilis, though

smaller and darker in colour. The name, however, appears to be correct.

13*. RANUNCULUS CŒNOSUS, *Guss.*
(R. Lenormandi, *Schultz*).

Area 1 2 3 * 5 6 7 8 9 * * 12 13.
South limit in Cornwall, Devon, Hants, Sussex.
North limit in Dumfries, —— ?
Estimate of provinces 12. Estimate of counties 50.
Latitude 50—55. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 51—57.

Native. Lacustral, Uliginal. Although the distribution of this species remains still very incompletely ascertained, the formula can be now better filled in, than was the case at the date of the first volume of this work; and accordingly a repetition is here introduced. With very few exceptions, the counties hitherto recorded for it, are situate in the western provinces; but the ascertained occurrence of the plant in Surrey and Leicestershire suggests a likelihood of its existence also in other eastern counties. On this account the English type is indicated, though uncertainly, in preference to the Atlantic, to which latter type its ascertained distribution might restrict the species, if not deemed imperfect and likely to be farther extended. (See vol. i. page 80.)

52. FUMARIA MICRANTHA, *Lag.*

Area * 2 3 4 5 * * 8 * * * * * 14 15.
South limit in Wilts, Sussex, —— ?
North limit in Moray, —— ?
Estimate of provinces 10. Estimate of counties 30.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.
Native? Agrestal. Since the first volume of the present work was written the distribution of this species has been more fully ascertained, although doubtless still far from being completely known. It has thus appeared better to re-write the formula in accordance with the present state of our knowledge. The species is now known to occur in the counties of Wilts, Sussex, Kent, Surrey, Norfolk, Cambridge, Gloucester, Leicester, Berwick, Haddington, Edinburgh, Perth, Forfar, Moray, and it may still reasonably be expected in many other of the intermediate counties. (See vol. i. page 112.)

53. FUMARIA PARVIFLORA, "*Lam.*"
54. FUMARIA VAILLANTII, *Lois.*

Area [1] 2 3 4 * * * * * [10] * * * 14 [15 * * 18].
South limit in Hants, —— ?
North limit in Edinburgh —— ?
Estimate of provinces 6. Estimate of counties 10.
Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, or nearly so.

Ascends to 100 yards, less or more.

Range of mean annual temperature 50—47.

Native? Agrestal. Professor Arnott still unites these as one single species. Mr. Babington, who formerly united them, now describes them as two species. I am myself still unprepared to distinguish them in a satisfactory manner; and am also quite unable to assign the several localities on record, under one or other name, correctly to the right variety or species. Some of the stations formerly reported for F. parviflora by name, belong to F. micrantha only; while in some other instances small forms of F. officinalis have been reported as F. parviflora. Thus, this latter name has a most vague and incorrect signification in reference to the stations on record. One or other of these two alleged species may be said to occur certainly in Kent (Mr. A. Henfrey), Surrey (Herb. Hook.), Essex (Mr. G. S. Gibson), Suffolk (Mr. C. J. F. Bunbury), Cambridge (Mr. C. C. Babington), Huntingdon (Rev. W. W. Newbould), and Edinburgh (Brit. Flora, &c.) It is reported also for Dorset (Dr. Salter), Hants (Mr. William Whale), Sussex (N. B. G.), Norfolk (Messrs. Paget), York (Baines' Flora), Forfar (Mr. William Brand), Moray (Outlines Geog. Distrib.), and Shetland (Mr. Edmondston). The plant of Moray was F. micrantha; that of Sussex was F. officinalis or micrantha; and so, probably, with some of the other counties here secondly enumerated. Not unlikely that the provincial and comital estimate may be given too low, although it is taken higher than trusty records will at present confirm. (See vol. i. page 113.)

LEPIDIUM SATIVUM, *Linn.*

Area (1 2 &c.)

Alien. This garden cress is frequently cultivated for spring salad, and hence it is found occasionally on rubbish heaps, by way sides, &c. An increasing tendency on the part of botanists to enumerate it in local lists and in reports of localities, seems to warrant or require a passing notice of it in this work.

FARSETIA INCANA, *Br.*

Area [* 2].

Incognit or Alien. This was found by Dr. Pulteney at a spot, since built over, at Weymouth in Dorset, where it was again lost in three or four years. I think it has been also mentioned again in some recent publication, although I cannot say where, having neglected to make a note of reference.

86. CARDAMINE HIRSUTA, *Linn.*

Area general.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, (Orkney), Hebrides.
Estimate of provinces 18. Estimate of counties 82.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—46.

Native. Glareal or Rupestral. The distribution of C. hirsuta can be described apart from that of C. sylvatica still only imperfectly. Both would appear to grow in the Hebrides (Balf. and Bab.); one only (but which really?) in Shetland, recorded as "C. hirsuta" by Edmondston. Mr. Syme thinks true C. hirsuta perhaps introduced to Orkney. In the above widely extended area and census, it will be understood that true C. hirsuta is still partially confounded or combined with C. sylvatica. I have myself traced it from Devon northward to Perth; and beyond this range or area, I go by the use of the name, without certainly knowing what botanists intended thereby. (See vol. i. page 138.)

86, b. CARDAMINE SYLVATICA, *Link.*

Area general?

South limit in Devon, Isle of Wight, Kent.

North limit in Hebrides, —— ?

Estimate of provinces 18. Estimate of counties 80.

Latitude 50—59. British type of distribution.

A. A. regions. Inferagrarian—Midarctic zones.

Descends to the coast level, in the Peninsula.

Ascends to 1000 yards, in East Highlands.

Range of mean annual temperature 52—37.

Native. Sylvestral, Paludal. It will probably be found that this form or species is more widely distributed than the C. hirsuta of dry places; although in books the name of the latter is more frequently used, meaning one or both of the apparent species, often without any clear indication which of them is intended. (See vol. i. page 138.)

95, b. BARBAREA STRICTA, *Andrz.*

Area * * * 4 5 * * * * 10 * * 13.
South limit in Hereford, Northampton, —— ?
North limit in Dumfries, York, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 52—55. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 yards, more or less.
Range of mean annual temperature, say 49—47.
Native ? Viatical or Inundatal ? I give a formula for this, although so little prepared to show its true distribution fully, because it has much the appearance of a species distinct from B. vulgaris. The counties of Hereford (Mr. Purchas, dubiously) and Dumfries (Mr. William Stevens) may require verification. Mr. J. G. Baker has given me specimens from Yorkshire; and Mr. Borrer has found the plant plentifully in that county and in Northampton. (See vol. i. page 145.)

135*. VIOLA FLAVICORNIS, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15.
South limit in Cornwall? Isle of Wight, Kent.
North limit in Moray ? Aberdeen, Forfar.
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—58. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 400 yards, or upwards, in East Highlands.

Range of mean annual temperature 51—42.

Native. Ericetal, Septal, &c. This is clearly a distinct species from the Viola sylvatica of Fries; the latter being the V. canina of Cybele Britannica, vol. i. page 177, and of all preceding English writers. The present species, however, has been almost always confused with V. sylvatica and V. lactea; its larger states or forms being referred to the former of these two, and its smaller forms to the latter. It is not nearly so abundant as V. sylvatica, but still is of rather frequent occurrence on open heaths and commons, on the sandy coasts, and even on hedge-banks in peaty or sandy ground. Some of the remarks made under the head of this species and V. lactea, in the first volume of the present work, were combatted by Mr. Edward Forster, and defended by myself, in the Phytologist (ii. 963, 1018, and iii. 31, 55, 635, 803). In the third edition of his Manual, Mr. Babington has abandoned his own former views, and those of Mr. Forster, and has there described V. canina (of English botanists) as one species, including his "pusilla" (flavicornis of Forster) with it, under the name of V. sylvatica;—V. flavicornis (Smith) and V. lactea (Smith), united together, as a second species, under the transferred name of V. canina;—and the Lincoln plant, suggested to be "very near the V. stagnina flaccida elongata of Kirschleger" (Cybele i. 179), as a third species, under name of V. stagnina. Some difficulties, still coming in the way of considering this a final view and settlement, will be mentioned below under the heads of Viola lactea and Viola stagnina. And I cannot but think it highly inconvenient and injudicious, to transfer the name of "canina" from the species to which it originally belonged, and to which it had been applied by every other English descriptive botanist, and to bestow the transferred name upon

a species which had been separated from the original V. canina so long ago as the time of Dillenius, and had been specially named "flavicornis" by Smith more than a quarter century ago. By whatever name to be designated, however, the distribution of the present species still requires to be more satisfactorily determined; and therefore in reporting localities for it, botanists should take care to let us know the species really intended, which the name "canina" cannot do without explanation, as it may now signify either sylvatica or flavicornis, or even lactea. Mr. Babington also suggests that V. montana (Linn.) may be a variety of his V. canina (Man. ed. 3), but the V. montana of the Linnean herbarium appears widely different. (See vol. i. page 177.)

135*. VIOLA LACTEA, "*Sm.*"—*Borr.*

Area 1 2 * 4 * * * * * * * * * [14].
South limit in Devon, Sussex.
North limit in Norfolk, —— ?
Estimate of provinces — ? Estimate of counties — ?
Latitude 50—53. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse.
Ascends to 50 yards, less or more.
Range of mean annual temperature 51—49.

Native. Uliginal or Ericetal. I am induced to treat this apart from V. flavicornis and V. stagnina, although uncertain whether all the plants thus named might not more correctly be divided between those two species. It is highly probable that Smith himself never understood his own V. lactea; and certainly most of the stations on

record for so-called V. lactea, do really belong to V. flavicornis or V. stagnina,—several to the former, one or more to the latter. I judge of the original V. lactea by a living Sussex plant kindly given to me by Mr. Borrer; but which has hitherto produced only apetalous flowers in my garden. It differs from V. flavicornis chiefly by its nearly ovate leaves, not at all cordate, and by its stem dividing into procumbent branches above ground, not tending to become cæspitose at the crown of the root. With this Sussex plant, I join specimens from Bickleigh Down, South Devon, obligingly sent to me by Mr. Keys; also another from Yarmouth denes, Norfolk, communicated several years ago by Miss Bell. But I should add, that this Yarmouth specimen excites considerable suspicion that V. lactea, as thus understood, does truly pass off into V. flavicornis of the sandy coasts; small and stunted examples of the latter, gathered from the sands of the Cheshire and Lancashire coasts, by Mr. Thomas Sansom, having their leaves scarcely cordate at base, and bearing a close general resemblance to this supposed V. lactea of Yarmouth; itself in turn very like the wild specimens from Bickleigh Down. If I remember aright, garden examples of V. flavicornis, from Mr. Forster, represent V. lactea in Smith's Herbarium. The figure of V. lactea in English Botany can hardly be said to represent V. flavicornis. Is it V. lactea or a small V. stagnina? (See vol. i. page 177.)

135*. Viola stagnina, *Kit.*

Area 1 * * 4 * * * 8.
South limit in Devon.
North limit in Lincoln.

Estimate of provinces — ? Estimate of counties — ?
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to —— ? (Altitude trifling).
Range of mean annual temperature 51—48.

Native. Uliginal. Mr. Babington states that he has seen specimens of this species "from Bottisham Fen, Cambridgeshire; Yaxley Fen, Hunts; Lincoln, *Dr. Nicholson;* Bovey Heathfield, Devon, *Prof. Henslow*". It is said to be distinguished from V. flavicornis and lactea by its "slender threadlike rhizomes", and "very short corolla-spur". It appears to have been imperfectly known, for several years, but confused with V. lactea. So long ago as 1833 (Outlines Geogr. Distrib. p. 103) I alluded to the difference between a specimen of "V. lactea" from Bottisham Fen, and the plant of Peebles, so named in the Flora Scotica, &c. The former is V. stagnina, and the latter is V. flavicornis. About a dozen years afterwards, I met with specimens of the Viola from Lincoln, in the hands of Sir W. J. Hooker, as mentioned in the first volume of the present work, page 179. Though much disposed to pronounce that Lincoln violet quite distinct from both flavicornis and lactea (properly so named), I was completely puzzled by receiving two other specimens of the same species of violet from the Rev. W. A. Leighton, which had flowered in his garden in June of 1836 and June of 1837, the product of a plant sent to him from Sussex, by Mr. Borrer, in March, 1836. Mr. Leighton's specimens differed from each other only in size; the larger example of 1837 being so very like the Lincoln Violet, that it might have been supposed only a branch taken from my specimen of the latter. It thus seemed as if the Viola lactea of Sussex had been changed into the

V. stagnina of Lincoln, by garden culture in Salop; while with me in Surrey it still remained more like V. flavicornis. It may be, however, that Mr. Borrer has had plants of supposed V. lactea in his garden from different sources; one of them, sent to Mr. Leighton in 1836, being really V. stagnina; the other, given to me some ten years later, being the true V. lactea, or that which so much resembles V. flavicornis, as mentioned under head of the preceding species.

†. Viola stricta, *Hornem.*

Hibernian. Reported by Mr. Babington, as having been discovered in the county of Galway, Ireland, by Mr. A. G. Moore, in June, 1851. I have not seen any specimen. (See Phytol. iv. 424; Annals, xlix. 12, Jan. 1852.)

141, c. Polygala amara, *Don.*

Area * 2 3 * * [6].
South limit in Wilts, Surrey, Kent.
North limit in the same counties.
Estimate of provinces 2. Estimate of counties 3.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 100 yards, less or more.
Range of mean annual temperature about 49—48.

Native. Pascual? Although not satisfied about the specific distinctness of this plant from P. vulgaris, a formula is here filled up for it so far as our very scanty records can allow. Mr. Motley included it in his unpub-

lished Catalogue of Caermarthenshire plants, now deposited, I am told, with some provincial society; but since no other botanist has found the P. amara there, so far as I can ascertain, it would seem safer not to include the province of South Wales in the area and census of the alleged species at present. (See vol. i. p. 186.)

160. LYCHNIS ALPINA, *Linn.*

Area * * * * * * * * * * * 12 * * 15.
South limit in Cumberland.
North limit in Forfar.
Estimate of provinces 2. Estimate of counties 2.
Latitude 54—57. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends to 650 or 700 yards, in Lake province.
Ascends to 1000 yards, less or more, in E. Highlands.
Range of mean annual temperature 40—37.

Native. Rupestral. The alleged locality in the Lake province having been confirmed by Mr. Daniel Oliver, to whom I am indebted for a specimen, this species may now be admitted among British plants with much less of distrust than formerly attached to it. The species in itself was likely enough to be found in Britain, considering its geographical distribution to include the Pyrenees, Alps, Norwegian mountains, Iceland, &c. In the sixth edition of the British Flora, however, it is rejected as a native, with a remark on the Clova station, to the effect that the Authors "have strong reasons for thinking that the plant was sown there, about 60 years ago. The Cumberland habitat is perhaps as doubtful." This remark appears directly to make the honesty of George Don, senior, a mooted question; and the answer to such a

question is one of some importance to botanical geographers, when we find the name of George Don still the only authority for the existence, actually or formerly, of several species recorded in the Floras of Britain; also, for the original nativity of some other species that were first announced by him, although other collectors have since confirmed the present existence of the species in or near the places first indicated by him. When George Don became a collector of plants for sale the mountains of Scotland had been very partially examined, and much of the ground that he most frequented was very little known to botanists. Under these circumstances, it was exceedingly probable that he would discover some new species, and also many new stations for species previously known in the flora of Britain. It appears that he was in the habit of bringing the plants so found into his garden for cultivation; and there can be scarcely a doubt that he occasionally gave or sold plants from his garden, without explaining that they were not sent direct from native localities, but indirectly through his own garden. When we add to this obvious source of error, on the part both of sender and of receiver, the fact that botanists were far less particular about the real nativity of specimens, some half century ago; and also that George Don himself, not having received a scientific education, was loose even among the loose, in his indications and reports of localities, the presumption of frequent errors becomes very strong. Hence, I come to the conclusion, that everything reported by or from Don, and remaining unverified after modern search, ought to be excluded from our lists of native plants and their stations; it being safer in science to take the chance of losing a few truths of small detail, than to run very great risk of mingling many errors with our presumed facts. Still, I do not see that anything at

present known of his conduct, or any necessary inference from known facts, would sufficiently warrant us in charging him with intentional deception or wilful falsehood. My individual impression is, that George Don's reports of species and stations, though many of them were doubtless correct, cannot safely be relied upon in strict science, unless confirmed afresh; but that a fair degree of moral confidence should still be given to his statements. The Cumberland station is true in regard to the species, and those botanists who have seen it (Mr. Mathews, Mr. D. Oliver, &c.) do not express any distrust of the nativity of the plant there. (See vol. i. page 204.)

194. CERASTIUM SEMIDECANDRUM, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 * * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, —— ?
Estimate of provinces 17. Estimate of counties 75.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—45.

Native. Glareal, Rupestral. In the first volume of this work, page 228, the names of five alleged species of Cerastium were grouped together, on account of the impossibility of separating the localities of these supposed species, so as to refer them correctly and respectively to each one species apart from the other four. Since the date of volume first Mr. Babington has admitted that his C. atrovirens is C. tetrandrum; and his C. pedunculatum also has been quite abandoned as a species. Thus, we

may now fall back to the state of matters in this genus, prior to the remodelling attempts of that botanist; in other words, to the two apparent species, C. semidecandrum and C. tetrandrum, plus the very dubious C. pumilum of Curtis. But as nobody knows what the last name intends, we may discard the C. pumilum as virtually a non-entity, equally with C. pedunculatum and C. atrovirens. For the present species, C. semidecandrum, I am unable to cite any locality in the West or North Highlands; and its area is therefore carried northward of Moray on the authority of the Shetland Flora only. (See vol. i. page 228.)

194*. CERASTIUM TETRANDRUM, *Curt.*
CERASTIUM ATROVIRENS, *Bab.*
CERASTIUM PEDUNCULATUM, *Bab.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 * 14 15 16 * 18.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 18. Estimate of counties 80.
Latitude 50—61. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 150 yards, in East Lowlands.
Range of mean annual temperature 52—45.

Native. Glareal, Rupestral. The remarks made under the preceding species, C. semidecandrum, will explain this second notice of the present species, and sufficiently justify the union of the above three names as representing a single species. I am yet by no means satisfied that C. semidecandrum and C. tetrandum are permanently distinct;

but in general the pentandrous flowers and semimembranous bracts will sufficiently distinguish the present from the preceding species, although the quinary or quaternary division of the flowers is not altogether constant. The stations of C. tetrandrum and its varieties have been more carefully recorded, apparently under the idea that it is the rarer of the two species; but if there is any decided difference between their census, perhaps C. semidecandrum may prove to be the less common, at any rate, in the northerly provinces. (See vol. i. page 228.)

MALVA VERTICILLATA, *Linn.*

Area (6).

Alien. Found in corn-fields, in the parish of Llanelly, Caermarthenshire, in 1843 and some subsequent years, by Mr. James Motley; doubtless introduced thither by some chance or accident, but how or by what means there would seem to have been no clear clew to determine. (See Eng. Bot. Supp. No. 2953; Phytologist ii. 973.)

MALVA NICÆENSIS.

Area (3).

Alien. Some few specimens of this species were found by Mr. Thomas Moore in "Battersea Fields, on the embankment opposite the Chelsea Botanic Garden". As implied by the name, it is a species of southern Europe, which occasionally appears in more northerly countries, through the accidental introduction of its seeds. It has thus been introduced into Denmark with marble from Italy.

Hypericum grandifolium, *Chois.*

Area [16].

Incognit. This was reported as found in Arran; but there is every reason to suppose an error in the report. Not unlikely H. hircinum may have been thus misnamed, as it is frequent in gardens and shrubberies. I possess a specimen of the latter, labelled by the late Professor Graham, under name of "H. Androsæmum.—From a neglected shrubbery at Touch".

250, b. Ulex Gallii, *Planch.*

Area 1 2 * * 5 6 * * * * 11 12 13.

South limit in Somerset, Dorset, —— ?

North limit in Wigton, Northumberland, —— ?

Estimate of provinces 10. Estimate of counties 30.

Latitude 50—55. Atlantic (?) type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in Peninsula or Channel.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Native. Ericetal. The distribution of Ulex nanus cannot be traced apart from that of U. Gallii; but the distribution of the latter species, so far as hitherto reported, may be shown separately from that of the former. And as several botanists would seem to regard U. Gallii in the character of a true species, a formula is here filled in for it, although of course this can yet be done only imperfectly. U. Gallii has been reported from Somerset,

Dorset, Gloucester, Stafford, Hereford, Monmouth, Glamorgan, Pembroke, Northumberland, Westmoreland, Cumberland, Isle of Man, and Wigton; all of these being counties of the western provinces, excepting Northumberland, where Mr. Storey finds U. Gallii. It may be expected in North Wales and the Mersey province, and in other counties of the Peninsula, South Wales, &c. As now standing in the first volume, the distribution of U. nanus will be understood to include that of U. Gallii also. (Ulex provincialis (Lois.?) in vol. i. page 277.)

258*. MEDICAGO SYLVESTRIS, *Fries.*

Area * * * 4.
South limit in Suffolk.
North limit in Norfolk.
Estimate of provinces 1. Estimate of counties 2.
Latitude 52—53. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends nearly to the coast level?
Ascends to 50 yards, more or less.
Range of mean annual temperature, about 49.

Denizen. Glareal? Very local, so far as hitherto ascertained; being known only in the two counties above indicated. Perhaps it grows also about two miles westward of Chester city, in ground which once constituted a part of the estuary of the Dee, before the formation of the new Channel. But the state of my specimens, picked late in the year of 1850, leaves this station quite uncertain. The fact therefore remains, that we yet know M. sylvestris as occurring in Suffolk and Norfolk only.

264*. Melilotus arvensis, *Willd.*

Area * * 3 4 * (6 * * * * * * * * 15).
South limit in Herts, Essex.
North limit in Suffolk, Norfolk, Cambridge.
Estimate of provinces 2. Estimate of counties 6.
Latitude 51—54. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends to 100 yards, more or less.
Range of mean annual temperature 49—48.

Denizen. Viatical. Nearly allied to M. vulgaris, but perhaps distinct therefrom as a species. It is reported as if indigenous in the five counties indicated above, by Mr. C. C. Babington and Mr. G. S. Gibson; and it has also occurred in those of Glamorgan and Fife, apparently not native.

†. Melilotus parviflora, *Desf.*

Area (3).

Alien. Surrey, 1851, on "Wandsworth Common; also in a cultivated field to the eastward of Wandsworth Railway Station". (Mr. G. Lawson, in Phytol. iv. 461.)

Trifolium elegans, *Sav.*

Area (* * 3).

Alien. Introduced occasionally among clover seeds imported for agricultural purposes. I have noticed it very

sparingly, in different years, in the parishes of East Molesey, Thames Ditton, and Chessington, all in Surrey; but being of shorter and more spreading growth than Trifolium pratense, among which it occurs, it is unlikely to be detected unless by the side of a footpath, or shortly after the first mowing of the crop. The close resemblance of its flowers to those of T. repens, when the latter are slightly coloured, also may tend to prevent detection even where it does come under sight.

278*. Trifolium strictum, *Linn.*

Area 1.
South limit in Cornwall.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 49—50. Local (Atl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, or nearly so.
Ascends little above the coast level.
Range of mean annual temperature 52.

Native? Pascual? The single English station on record for this plant, is "near the Lizard Point, Cornwall"; the only part of England, except the Scilly Isles, which extends to the southward of the latitudinal line of 50. It may appear needless to fill in one of the usual formulas, in the case of a plant which is so very restricted in its area. The need or desirability of uniformly doing this, even for the most local plants, is to be found in the eventual use of the formula. The information will be required some future day, ready prepared and uniformly arranged, in order to institute comparisons between the botany of Britain and that of other countries, and also between the

botanical peculiarities of different portions or divisions of Britain itself, provincial, regional, altitudinal, &c. Any sort of omission, equally as any undue admission, would tend to vitiate statistical enumerations, by so far rendering them less exact numerically. (See vol. i. page 302.)

282. Trifolium minus, *Relh.*

Area 1 2 3 4 5 6 7 8 9 10 11 * 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Kincardine, —— ?
Estimate of provinces 16. Estimate of counties 60.
Latitude 50—57. English (?) type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.

Native. Pascual, &c. It is to be feared that this name has still an application too uncertain for reliance, in tracing the distribution of the plant intended by it. Assuming the existence of three distinct species, the name "T. minus" seems to represent sometimes the third species, sometimes allied or imitative forms of the two other species, T. filiforme and T. procumbens, confused with that third species. (See vol. i. page 304.)

282*. Trifolium filiforme, *Linn.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Ross, Aberdeen, Argyle.
Estimate of provinces 17. Estimate of counties 75.

Latitude 50—59. British type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Glareal, Pascual, &c. According to the use of the name in local Floras, &c., this species would seem to be more frequent and more widely distributed than T. minus. (See vol. i. page 304.)

†. Scorpiurus subvillosus, *Linn.*

Area (3).
Alien. In Surrey, 1851, "in a cultivated field near to the Wandsworth Railway Station". (Mr. G. Lawson, in Phytol. iv. 461.)

298, b. Vicia angustifolia, *Sm.*

Area 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15.
South limit in Cornwall, Isle of Wight, Kent.
North limit in Moray, Aberdeen, —— ?
Estimate of provinces 16. Estimate of counties 75.
Latitude 50—58. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 52—47.
Native. Pascual, &c. Although believing this to be simply the wild form of the cultivated V. sativa, I have thought that a separate formula might be worth giving here, by way of assistance towards distinguishing between

the natural and the agricultural area of the species. It is, however, not always possible to know whether authors intend one or both forms in their Lists and Floras. (See vol. i. page 317.)

† VICIA ERVILLA, *Willd.*

Area (1).

Alien. "Has occurred on cultivated land in Somersetshire" (Bab. Man. edit. 3). This extract conveys all that is known to me about the plant being found in England.

339. RUBUS CÆSIUS, *Aut.*
340. RUBUS FRUTICOSUS, *Aut.*
&c. &c. &c.

In the first volume of the Cybele all the British species of Rubus, real or supposed, between R. saxatilis and R. Idæus, were grouped under the above two names, for the reasons explained under the second of them, page 353. Since that volume was written various further subdivisions, and some few combinations, have been made by the botanists who devote their attention particularly to these troublesome bushes. The consequence is, that published records of localities, names and stations on labels, and other sources from which any account of their distribution could be drawn, are rendered too uncertain and non-corresponding for reliance, in any attempt to trace the special distribution of the several supposed species taken separately. Only one safe course seems left; namely, that of ignoring the past records, with few exceptions, and commencing *de novo*. Accordingly, I requested Mr. C. C.

Babington to give me his aid here, in the form of a list of provinces or counties for the several species described in the third edition of the Manual of British Botany. This request he has very obligingly met; and the list of species, with their provinces and counties is copied below, preceded by some explanatory observations which accompanied the list.—(H. C. W.)

(*Mr. Babington's Distribution of Rubi.*)

"This sketch of the distribution of the Rubi can only be considered as a very incomplete outline of the reality. It is the first attempt that has been made to show to what extent each so-called species is spread throughout Great Britain. Owing to the peculiar difficulty which attends the study of brambles and the consequent uncertainty of the names given to them by botanists and collectors, the reception of records of localities has been obliged to be restricted to those derived from a very few competent authorities; and, since the continued study of the plants by the botanists referred to has recently led to a rather extensive change in our views concerning them, it is necessary to neglect several of the earlier lists although they were drawn up by persons who, both then and now, cannot but be considered as competent. It has also resulted from the difficulty of correctly naming these plants that botanists have often omitted to gather and preserve specimens of them, and that, therefore, parts of the island have scarcely a species recorded as native to them. The provinces numbered 12, 13, 14, 15, 16 are imperfectly known; but of the Rubi belonging to 1, 9, 11, 17, 18, 19 and 20, we are nearly altogether ignorant. In some cases, such as many of the Welsh counties, the Rubi only suffer neglect in common with all the other native plants, but in

many counties of England and a large part of the lowlands of Scotland their apparent absence is merely the result of their not being understood by those who have given to us the several county lists. In the extreme north of Scotland and in the northern Isles it is probable that very few species exist. In a list drawn up by Dr. Balfour and the present writer, of the plants of N. Uist, Harris and Lewis, a part of the N. Isles, *R. corylifolius*, *R. fruticosus* and *R. saxatilis* are mentioned. It is now quite impossible to state what may be the true name of the first of these plants, but it is believed that the *R. fruticosus* is *R. discolor*, and the *R. saxatilis* correct. No accurate observations appear to have been made upon the elevation to which the fruticose Rubi attain, but it is highly probable that the range from the coast level in the Peninsula to the height of 250—300 yards in the Highlands is generally accurate, and as far as observation has extended there seems to be no material difference between the so-called species in this respect.

The catalogue of the counties in which the different Rubi have been found, is chiefly derived from specimens preserved in the writer's own herbarium; but he has been favoured with lists of the localities recorded in the collections of the Rev. A. Bloxam, the Rev. W. A. Leighton and F. J. A. Hort, Esq., on the authority of which many counties have been added to the list; the individual authority for them being given within a bracket, as (B.), (L.) or (H.) respectively. Those localities are similarly distinguished which the writer believes that he has himself noticed, but from which no specimens exist in his collection; a few also are added from other authorities which will be recognized by the marks appended to them."

2. R. LEESII, *Bab.*
   Area 1.
   Devon. Somerset.

3. R. SUBERECTUS, *And.*
   Area 1 2 3 * 5 * * 8 * 10 * 12 13 * 15.
   Devon. Hants. Herts (Flo. Hertf.). Worcester (B.). Warwick (B.) Salop. Hereford (B.). Leicester (B.). York (H.). Cumberland (H.). Westmoreland (H.). Dumfries. Perth. [To the preceding, given by Mr. Babington, it will surely be safe to add the counties of Dumbarton, Argyle, and Moray, for Anderson's R. suberectus; the former being part of province 16.—H. C. W.]

4. R. FISSUS, *Lindl.*
   Area * * * * 5.
   Salop.

5. R. PLICATUS, *W. & N.*
   Area * 2 3 * 5 6 7 8 9 10 * 12 13 14 15.
   Dorset. Hants. Kent. Herts. Gloucester. Worcester (L.). Warwick (B.). Stafford. Salop. Pembroke (C. C. B.). Merioneth. Caernarvon (B.). Leicester. Derby (B.). Lancaster. York (L.). Cumberland. Westmoreland (H.). Dumfries. Edinburgh. Perth. Aberdeen (C. C. B.).

6. R. SALTERI, *Bab.*
   Area * 2 * * * * 7 * * * 11.
   Hants. Caernarvon. Durham.

7. R. NITIDUS, *Bell Salt.*
   Area * 2 3 4 5 6 * 8 * 10 * 12 13.
   Hants. Herts. Northampton (B.). Gloucester

(H.). Worcester. Warwick (B.). Salop. Hereford. Monmouth (H.). Pembroke (C. C. B.). Leicester. Derby. York. Cumberland. Westmoreland. Renfrew.

8. R. AFFINIS, *W. & N.*
Area * 2 3 * 5 6 7 8 * 10 * 12 13 * 15 16.
Sussex. Herts. Gloucester. Worcester. Warwick. Salop. Hereford. Monmouth. Pembroke. Caernarvon. Leicester. Derby (B.). York. Cumberland. Westmoreland. Dumfries. Perth. Argyle.

9. R. LATIFOLIUS, *Bab.*
Area * * * * * * * * * 10 * * * 14 15.
York. Linlithgow. Perth.

10. R. IMBRICATUS, *Hort.*
Area * * * * 5.
Gloucester. Monmouth.

11. R. INCURVATUS, *Bab.*
Area * 2 * * * 6 7 * * * * 12.
Sussex. Pembroke. Caernarvon. Westmoreland.

12. R. RHAMNIFOLIUS, *W. & N.*
Area * 2 3 4 5 6 7 8 9 10 * * * * * 16.
Hants (L.). Herts (Flo. Hertf.). Norfolk. Gloucester. Worcester. Warwick (B.). Salop. Monmouth. Pembroke (C. C. B.). Caernarvon. Denbigh (L.). Leicester. Lancaster (L.). York. Arran (L.).

13. R. GRABOWSKII, *Weihe.*
Area * * * * * * * 8.
Leicester.

14. R. THYRSOIDEUS, *Wimm.*
Area * * 3 4 5 6 * 8.

Herts (Flo. Hertf.) Bedford. Northampton (B.). Warwick. Worcester (H.). Salop (H.). Stafford (B.). Hereford. Monmouth. Pembroke. Leicester. Derby (B.).

15. R. DISCOLOR, *W. & N.*

Area 1 2 3 4 5 6 7 8 * 10.

Devon (H.). Somerset. Hants. Sussex (B.). Herts (Flo. Hertf.). Norfolk. Cambridge. Northampton (B.). Gloucester. Worcester (L.). Warwick (B.). Stafford (B.). Salop. Hereford (L.). Monmouth (H.). Pembroke (C. C. B.). Caernarvon. Derby (B.). York.

16. R. LEUCOSTACHYS, *Sm.*

Area 1 2 3 * 5 6 7 8 * 10 * 12.

Cornwall (H.). Somerset. Hants. Sussex. Herts. Gloucester. Worcester. Warwick (B.). Stafford. Salop. Hereford. Monmouth. Pembroke. Merioneth (B.). Caernarvon. Leicester (H.). Derby (B.). York. Westmoreland. Cumberland.

17. R. CARPINIFOLIUS, *W. & N.*

Area 1 2 3 4 5 6 7 8 * 10 * 12 13 14 15 16.

Cornwall. Devon. Hants. Herts. Bedford. Gloucester. Worcester. Warwick (B.). Salop. Monmouth. Pembroke. Cardigan. Caernarvon. Leicester. Derby (B.). York. Westmoreland. Cumberland. Renfrew. Linlithgow. East Inverness. Arran.

18. R. VILLICAULIS, *W. & N.*

Area 1 2 3 * 5 6 7 8 * 10 * 12.

Somerset. Hants. Herts (Flo. Hertf.). Gloucester. Worcester. Warwick (B.). Salop. Hereford.

Monmouth. Pembroke. Merioneth. Caernarvon. Leicester. York (B.). Westmoreland. North Lancaster.

19. R. MUCRONATUS, *Blox.*
Area * * * * 5 * * 8 * 10 * * * * * 16.
Warwick. Salop. Leicester. York. Argyle.

20. R. CALVATUS, *Blox.*
Area * * * * 5 * * 8.
Salop. Leicester.

21. R. MACROPHYLLUS, *W. & N.*
Area 1 2 3 * 5 6 7 8 * 10 * 12 13 14.
Cornwall. Devon. Hants (L.). Sussex. Herts. Gloucester (H.). Worcester. Salop. Monmouth. Cardigan. Caernarvon. Anglesea. Leicester (H.). Derby. York (B.). Cumberland. Westmoreland. Dumfries. Linlithgow.

22. R. BALFOURIANUS, *Blox.*
Area * * * * 5.
Warwick.

23. R. SPRENGELII, *Weihe.*
Area * 2 3 * 5 * 7 8 9 10 * 12.
Hants. Herts. Gloucester. Worcester. Warwick. Salop (L.). Monmouth (H.). Denbigh (B.). Leicester. Derby (B.). Chester. York. Westmoreland.

24. R. FUSCUS, *Weihe.*
Area * * 3 * 5 * * 8.
Herts. Worcester. Leicester.

25. R. BABINGTONII, *Bell Salt.*
Area 1 2 3 * 5 * 7 8.

Somerset. Hants. Herts. Worcester. Warwick. Salop. Monmouth. Caernarvon. Leicester (B.).

R. HYSTRIX, *Weihe.*

Area 1 2 3 4 5 6 * 8 * 10.

Devon (H.). Sussex. Herts (Flo. Hertf.). Cambridge. Gloucester. Worcester. Warwick (B.). Salop. Hereford. Monmouth. Pembroke. Leicester. York (B.).

R. RADULA, *Weihe.*

Area 1 2 3 4 5 6 7 8 * 10 * * 13 14.

Devon. Dorset. Hants. Herts (Flo. Hertf.). Bedford. Worcester (B.). Warwick (B.). Salop. Pembroke. Caernarvon (B.). Leicester. Derby (B.). York (B.). Dumfries. Edinburgh.

R. RUDIS, *Weihe.*

Area 1 2 3 * 5 6 7 8 * 10 * * 13 14.

Devon (H.). Somerset. Hants. Sussex (H.). Herts. Gloucester. Worcester. Warwick. Salop. Hereford. Monmouth. Pembroke. Denbigh (L.). Caernarvon. Derby (B.). Leicester (H.). York. Renfrew. Linlithgow.

R. PALLIDUS, *Weihe.*

Area * * 3 4 5 6 7 8 * 10 11 12 13 * 15.

Herts. Northampton (H.). Gloucester. Worcester. Salop. Hereford (L.). Pembroke (C. C. B.). Caernarvon. Leicester. York. Durham. Cumberland (H.). Westmoreland (H.). Renfrew. Perth.

R. KOEHLERI, *Weihe.*

Area 1 2 3 * 5 6 * 8 * 10 * 12 13.

Cornwall (H.). Devon. Sussex (H.). Herts (Flo. Hertf.). Gloucester. Worcester. Warwick (B.). Salop. Monmouth. Pembroke (C. C. B.). Leices-

ter (B.) York. Cumberland (H.). Westmoreland. Renfrew.

31. R. FUSCO-ATER, *Weihe.*
Area 1 2 3 * 5 6 7 8 9 10.
Somerset (H.). Sussex. Herts. Gloucester. Worcester. Warwick (B.). Salop. Monmouth (H.). Pembroke (C. C. B.). Caernarvon (L.). Leicester. Lancaster. York (B.).

32. R. PYRAMIDALIS, *Bab.*
Area 1 * * * 5 * 7.
Somerset. Worcester (H.). Monmouth (H.). Caernarvon.

33. R. GUNTHERI, *Weihe.*
Area 1 * 3 * 5.
Cornwall. Herts. Worcester. Warwick. Monmouth.

34. R. HIRTUS, *W. & N.*
Area * * 3 * 5 * * * * * * 12.
Herts (Flo. Hertf.). Kent. Worcester (L.). Warwick. Salop. Dumfries.

35. R. GLANDULOSUS, *Bell.* (R. BELLARDI, *Weihe*).
Area * * 3 * 5 * * 8 * 10.
Herts (Flo. Hertf.). Worcester. Salop. Monmouth. Leicester. York.

35, b. R. LEJEUNII, *Weihe.*
Area * 2 3 * 5 * * 8 * 10.
Sussex (H.). Middlesex (B.) Herts (Flo. Hertf.). Gloucester (H.). Worcester (H.). Warwick (B.). Hereford (B.). Monmouth. Leicester. York.

35, c. R. ROSACEUS, *Weihe.*
Area 1 2 3 * 5 * 7 8 * 10 * 12.

Devon. Hants. Herts. Worcester (L.). Salop. Monmouth. Caernarvon. Leicester. York. Westmoreland.

36. R. SCABER, *Weihe.*
Area * * 3 * 5 * 7 8.
Herts. Middlesex (B.). Warwick. Caernarvon (B.). Leicester (B.).

37. R. CORYLIFOLIUS, *Sm.* (R. SUBLUSTRIS, *Lees*).
Area * 2 3 4 5 6 * 8 9 10.
Sussex. Herts. Cambridge. Gloucester (H.). Worcester (L.). Salop. Pembroke (C. C. B.). Derby (B.). Leicester. Cheshire (H.). York.

37, b. R. (CORYLIFOLIUS) CONJUNGENS, *Bab.*
Area 1 * * 4 5 6 7 8 9 * * * 13.
Somerset. Cambridge. Bedford. Gloucester (H.). Salop. Monmouth (H.). Pembroke. Caernarvon. Leicester (L.). Lancaster. Renfrew.

37, c. R. (CORYLIFOLIUS) PURPUREUS, *Bab.*
Area 1 2 * 4 5 * * 8.
Devon (H.). Somerset. Hants (L.). Norfolk. Northampton (H.). Gloucester (H.). Worcester (L.). Salop. Hereford. Monmouth (H.). Leicester.

38. R. WAHLBERGII, *Arrh.*
Area * 2 3 4.
Hants. Sussex. Herts. Cambridge.

39. R. NEMOROSUS, *Hayne.*
Area * 2 3 4 5 6 * 8 * 10 11 12.
Hants. Sussex. Herts. Cambridge. Gloucester. Worcester. Warwick (B.). Salop. Pembroke (C.

C. Bab.). Derby (B.). Leicester. York. Durham. Westmoreland (H.).

40. R. CÆSIUS, *Linn.*

Area 1 2 3 4 5 6 7 8 * 10 11 * 13.

Somerset. Dorset. Wilts. Hants. Sussex. Herts. Norfolk. Cambridge. Gloucester (H.). Worcester (B.). Warwick (B.). Salop. Pembroke (C. C. B.). Caernarvon. Leicester. Derby (B.). York (B.). Durham. Dumfries.

353*. POTERIUM MURICATUM, *Spach.*

Area * 2 3 4 5.

South limit in Hants, Surrey, —— ?

North limit in Cambridge, Warwick, Hereford.

Estimate of provinces 6. Estimate of counties 12.

Latitude 50—53. English type of distribution.

Agrarian region. Inferagrarian zone.

Descends to the coast level, or nearly so.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 50—48.

Native. Pascual, Rupestral. Formerly included with P. Sanguisorba, and only very recently distinguished from the latter in England. It has occurred in Hants (Rev. W. W. Spicer), Surrey and Essex (Mr. G. S. Gibson!), Suffolk (uncertainly native, Mr. W. Matthews), Cambridge (Mr. G. S. Gibson), Warwick (Mr. Thomas Kirk!), Hereford (Mr. W. H. Purchas); and it may be expected in various other intermediate or adjacent counties; although the smaller P. Sanguisorba is probably much the more frequent and more widely distributed species or variety.

365, b. PYRUS PINNATIFIDA, *Ehrh.*
(Pyrus fennica, *Bab. ed.* 3.)

Area 1 2 3 * (5 * * 8) * * * * * 14 * 16.
South limit in Somerset? Surrey? Kent.
North limit in Edinburgh? Arran.
Estimate of provinces — ? Estimate of counties — ?
Latitude 51—56. English (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, or nearly so.
Ascends to 200 yards, more or less. ("Mountains").
Range of mean annual temperature 50—47.

Native? Rupestral, Sylvestral. Very uncertain as a species, and its distribution very imperfectly ascertained. I am induced to give formulas for this and P. intermedia or scandica, apart from P. Aria, chiefly because Mr. Babington so treats them in his Manual of British Botany, third edition; partly also, because feeling at a loss under which species, Aria or Aucuparia, to place P. pinnatifida, if treated as a variety only. A specimen of P. pinnatifida is in my herbarium from Darenth Wood, Kent, given to me by Mr. James Macnab, with the date of 1827; but by whom gathered, I am unable to say. Also, others from Gloucester, Leicester, and Dumbarton, probably taken from planted trees. One of my specimens from Arran, received through the Botanical Society of Edinburgh, has its leaves only semi-pinnatifid, that is, none of the lobes separated much more than half-way down to the midrib; so that "the lower part of the leaves is *not* truly pinnate." An Edinburgh example from Dr. Balfour, labelled "P. Aria—Arthur's Seat, 1837", has its leaves lobed as deeply towards the base as is the case in that example from

Arran; so that I feel compelled to join it with P. pinnatifida, although certainly an approximation to P. Aria by its less deeply pinnatifid and more downy leaves. With those examples before me, I cannot limit the area of P. pinnatifida to the Isle of Arran, as Mr. Babington would do (Manual, page 111; and Bot. Gaz. vol. iii. page 35). From the localities reported in Somerset (Mr. Flower) and Surrey or Hants (Mr. Reeves; Bromf. Cat.) I have seen no specimens. (See vol. i. page 367.)

365, c. PYRUS INTERMEDIA, *Ehrh.*
(Pyrus scandica, *Bab. ed.* 3.)

Area 1 2 3 * * * 7 * * * 11.
South limit in Devon, Hants, —— ?
North limit in Durham, Denbigh, —— ?
Estimate of provinces 6. Estimate of counties 12.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 300 yards, or upwards.
Range of mean annual temperature 50—45.

Native. Rupestral, Sylvestral. I have seen this alleged species in Devon and Denbigh. To these counties Mr. Babington adds (Bot. Gaz. iii. p. 35) Somerset, Hants, Berks, and Durham; and Mr. Lees reports that of Caernarvon likewise. Difficult to be distinguished from P. Aria, in the case of many examples which appear like transition forms. (See vol. i. page 367.)

370*. EPILOBIUM LANCEOLATUM, *S. & M.*

Area * * 3 * 5.
South limit in Monmouth, Gloucester, Surrey.
North limit in the same counties.
Estimate of provinces 2. Estimate of counties 3.
Latitude 51—52. Local (Engl.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Thames.
Ascends to 50 yards, less or more.
Range of mean annual temperature 50—49.

Native. Rupestral or Sylvestral. Either overlooked by collectors or very local. Has been found at Stapleton and Hanham, near Bristol, and also at Tintern, Monmouthshire, by Mr. Thwaites, from whom I have a series of specimens. Exactly the same plant has occurred very sparingly, on and under an old and much shaded garden wall, near the church at Long Ditton, Surrey. Having allowed it to seed and repeat itself in my garden, for some years, as an introduced weed, and thus kept it constantly under observation, I do not hesitate now to separate it from E. montanum. It can readily be distinguished from the latter at all seasons, and in December quite as well as in June, after having been once clearly known by sight. Probably, however, it is confused by authors with narrow-leaved states both of roseum and of montanum. (See vol. i. page 371.)

373, b. EPILOBIUM VIRGATUM, *Fries.*

†. EPILOBIUM LAMYI, *F. Schultz.*

Area * 2 3 4 * * * 8 * 10 11 * 13 * 15.
South limit in Isle of Wight, Kent, ——?
North limit in Kincardine, ——?
Estimate of provinces 15. Estimate of counties 60.
Latitude 50—57. English type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Thames or Channel.
Ascends to 300 yards, more or less.
Range of mean annual temperature 51—45.

Native. Paludal, Inundatal. A very obscure species, and probably confused with both E. tetragonum and E. palustre, if there truly is any third species to represent E. virgatum, distinct from both those other two. I give the provincial area according to the reported localities; making a large addition thereto in the estimated census. E. Lamyi is a plant recently found in Kent, by Mr. Thomas Moore, and suggested by Mr. Babington to be the species imperfectly described under that name in Grenier and Godron's Flore de France, and who remark that it is "extremely near E. tetragonum." I have seen it in several places in North Surrey and North Hants, and have not hitherto satisfactorily distinguished it from ordinary E. tetragonum, although there are some physiognomical differences by which it may usually be recognized. It represents E. virgatum with some good British botanists, although placed in a different section by Grenier and Godron. (See vol. i. page 373.)

416*. Sedum Forsterianum, *Sm.*

Area [1 * * 4 5] 6 7.
South limit in Cardigan, Radnor.
North limit in Caernarvon? Denbigh?
Estimate of provinces 2. Estimate of counties 4.
Latitude 52—54. Local (Atla.) type of distribution.
Agrarian region. Midagrarian zone.
Descends to 100 yards, less or more.
Ascends to 200 yards, more or less.
Range of mean annual temperature, say 48—47.

Native. Rupestral. It is to be feared that fully half of the stations on record for S. Forsterianum, by name, do truly belong to S. rupestre. Those upon which I found the above imperfect sketch of distribution, are as follows: — Near Water-break-its-neck, Radnor (Mr. T. Westcombe, in Phytol. i. 781); at the fall of Rhydol, Cardigan (Mr. E. Forster); Hisvae, valley of Nant Phrancon, Caernarvon (Hook. Br. Flo.); on a wall, south of Gwydir chapel, near Llanroost, Denbigh (Mr. Griffith, in B. G. *plus* a manuscript note from Mr. E. Forster, in Mr. Dawson Turner's own copy, designating it "a new species, different both from S. rupestre and S. reflexum"). The counties of Somerset, Northampton, Salop, Hereford, Glamorgan, Montgomery, Merioneth, on various authority, have also been reported for E. Forsterianum; but most or all the stations in those counties should probably be indicated for S. rupestre instead; that of Northampton being very likely altogether erroneous. (See vol. i. page 402.)

416*. SEDUM RUPESTRE, *Linn.*

Area 1 [2] * * 5 6 7 [8 * 10] * (12) 13.
South limit in Somerset. [Devon ? Dorset.?]
North limit in Caernarvon, Denbigh, Wigton ?.
Estimate of provinces 5. Estimate of counties 10.
Latitude 51—55. Atlantic type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.
Ascends to 350 or 400 yards, in North Wales.
Range of mean annual temperature 50—46.

Native. Rupestral. The stations recorded for this and S. Forsterianum, are still so confused together as to render their correct assignment to the respective species quite impossible until most of them shall have been verified afresh; while some few among them very probably belong to S. reflexum or glaucum. Judging of the two alleged species from garden examples kindly given to me by Mr. Borrer, S. rupestre is quite distinct from S. Forsterianum; though I judge from imperfect knowledge, the latter species having not yet flowered with me. I fear that all the native examples kept in my herbarium, sent under either name, must be referred to S. rupestre. Several of the stations have been reported for both species, though usually by different collectors, that is, one recording S. rupestre, another recording S. Forsterianum, from the same spot. But Mr. Anderson (Linn. Trans. xi. 225) and Mrs. Russell (Phytol. iii. 77) believed that they found both species intermingled in Somerset and Merioneth. The Rev. W. A. Leighton refers all the Salopian stations (Flora of Shropshire) to S. Forsterianum: I suspect still that all may belong rather to S. rupestre, which would

seem to grow usually on dry rocks; while S. Forsterianum is reported on wet rocks, in the stations apparently most to be trusted as correct. Is the locality of Loch-naw, in Wigton, a truly native habitat? (See vol. i. page 402.)

†. SEDUM ELEGANS, *Lej.*

Sarnian? A living plant sent to me by Mr. Borrer, located from Jersey, but without specific name, is different from all the English species, and may perhaps be referred to this Gallic species. Indeed, I think to have heard or read some previous suggestion to this effect, possibly from Mr. Borrer himself.

421*. SAXIFRAGA ANDREWSII, *Harv.*

Hibernian. Described and figured by Dr. Harvey, in the London Journal of Botany (vol. vii. page 569) from a garden example, which had been originally found, not then in flower, "on moist cliffs in a mountain at the extreme termination of Glen Caragh, either Cluan or Clara-beg, I am not certain which". So writes Mr. William Andrews, its discoverer; and who had brought the plant thence on account of its narrower leaves than usually seen in S. umbrosa. It differs remarkably from this latter in one character, "sepalis basi coalitis ovario adhærentibus;" but I am still much disposed to regard it in the light of a monstrous or abnormal state of the S. umbrosa.

474*. ŒNANTHE FLUVIATILIS, *Colem.*

Area 1 2 3 4 5 * * 8.
South limit in Dorset, Hants, Kent, ——?
North limit in Leicester, Warwick, ——?
Estimate of provinces 8. Estimate of counties 20.
Latitude 50—54. English type of distribution.
Agrarian region. Inferagrarian zone.
Descends to the coast level, in Ouse, &c.
Ascends to 100 yards, more or less.
Range of mean annual temperature 51—48.

Native. Lacustral. In the first volume of this work the formula was very imperfectly filled in for the present species, but little known or noticed up to the time of its date. Even now, the re-written formula shows an area and census still perhaps much within what they may eventually prove to be. In addition to the counties above mentioned, those of Somerset, Wilts, Oxford, Herts, Essex, Suffolk, and Northampton have been reported or ascertained. (See vol. i. page 445.)

535. FEDIA CARINATA, *Stev.*

Area 1 * 3 * 5 * 7 * * 10.
South limit in Devon, Kent, ——?
North limit in York, ——?
Estimate of provinces 8. Estimate of counties 10.
Latitude 50—55. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 51—47.

Denizen. Agrestal, &c. The cultivation of this Fedia for three successive seasons, during which a very few original seeds, brought by Mr. Henfrey from Devon, produced many hundreds of the plants, and among which none assumed the characters of F. olitoria, obliges me to regard it as a distinct species. Whether a genuine native of Britain, or an escape from cultivation, remains to be settled. The only spot in which I have myself hitherto found F. carinata, was on the outside bank of a wooden fence dividing an old garden from a lane, in Long Ditton, Surrey. Dr. Bromfield wrote me that Mr. E. Forster's station for it, at Marden Ash, near Ongar, is on a garden wall, and that he did not doubt its being an escape from cultivation there. Mr. Buckman reports it as if a frequent weed in fields on the Cotteswold hills, in Gloucestershire; but Mr. Prentice intimated to me that Mr. Buckman had mistaken F. dentata for the present species; which is probable enough, as other species of the 'Botany of Cheltenham' unavoidably tend to excite strong suspicion that Mr. Buckman is not always correct in the specific names of plants. I possess specimens from Salop (Rev. W. R. Crotch) and Denbigh (Mr. J. E. Bowman). Kent is indicated on the authority of Mr. Babington; and York, on that of Mr. William Francis, in Bot. Gaz. ii. 223. At present, the provincial and comital estimates can be little better than guesses. (See vol. ii. page 27.)

536. Fedia Auricula, *DC.*

Area 1 2 3 * 5 6 * * * 10 * * * * 15.

South limit in Cornwall, Isle of Wight, Kent.

North limit in Fife, ——?

Estimate of provinces 10. Estimate of counties 30.

Latitude 50—56. English type of distribution.

Agrarian region. Inferagrarian—Midagrarian zones.

Descends to the coast level, in the Peninsula.

Ascends to 100 or 200 yards, in England.

Range of mean annual temperature 52—47.

Colonist. Agrestal. Ascertained in 15 counties; and it may be expected in at least double that number, considering the great probability of its being overlooked through its close resemblance to F. dentata, and the recent period at which attention has been particularly drawn to it. I can scarce yet persuade myself of its permanent distinctiveness from F. dentata; but I have frequently looked without success for their two kinds of fruit on one single plant. (See vol. ii. page 28.)

538. Fedia eriocarpa, *Desv.*

Area [7].

Incognit. The true F. eriocarpa appears sufficiently distinct from F. dentata; but I do not suppose that it has ever been found in Britain. Several of the Fedias, and perhaps more especially F. dentata, vary very much in the size and form of the calyx crowning the fruit; and hence probably a form of F. dentata, with an elarged calyx, has been mistaken for F. eriocarpa. Indeed, an able continental botanist, who lately visited England, told me that he had found F. eriocarpa in Sussex; but on my requesting to see his specimens, they proved to be the large-calyx form of F. dentata. (See vol. ii. page 28.)

574. HIERACIUM IRICUM, *Fries*.
(H. Lapeyrousii, *Bab. Man. ed.* 2.)

Area * * * * * * * * * * 11 * * * [15].
South limit in York.
North limit in Durham. [Perth ?]
Estimate of provinces 2. Estimate of counties 2.
Latitude 54—55. Highland type of distribution.
Arctic region ? Inferarctic zone ?
Descends to ——— ?
Ascends to ——— ?
Range of mean annual temperature ——— ?

Native. Rupestral. Mr. Borrer and Mr. Gibson equally pronounce this species quite distinct from H. Lawsoni, after having seen it in the wild state and also under garden culture. I have myself seen it living as a garden plant only, but can now concur with their views. As yet, it appears to have been certainly found only in the two adjacent counties of York and Durham, that is, in and about Teesdale. But Mr. Gibson reports H. Lapeyrousii *or* cerinthoides as found in the neighbourhood of Blair Athole, Perthshire (Phytologist iv. 65). Whether or not H. iricum descends into the agrarian region I am unable to say, but likely enough this may be the case. H. compositum (Lap.), from "Prats de Mollo, Pyr. orient. Xatard. Aug. 1831," distributed by the Unio Itineraria, differs but little from the plant of Teesdale. (See vol. ii. page 58.)

576. HIERACIUM SCHMIDTII, "*Tausch.*"

Area —— ?

Incognit. This may be expunged altogether. It was never known to me as a species; and it is omitted in the third edition of Babington's Manual, the only British author who had described it. Dr. Arnott assigns the labelled examples that have been seen by himself, partly to H. sylvaticum, and partly to H. murorum; that is, to the species so designated by English botanists, and described under those names in the British Flora. (See vol. ii. page 56, No. 572*.)

†. HIERACIUM CORYMBOSUM, *Fries.*

Area * * * * * * 7 * * 10 11 * * * 15 16 17.

South limit in "Wales" and "Teesdale."

North limit in Sutherland.

Estimate of provinces 6. Estimate of counties 10.

Latitude 53—59. Highland type of distribution.

A. A. regions. Superagrarian—Inferarctic zones.

Descends to the coast level, in North Highlands.

Ascends to 500 yards, or upwards, in East Highlands.

Range of mean annual temperature 46—41.

Native. Rupestral, &c. In Babington's Manual we are informed that this species occurs in "mountain glens in Wales and Scotland," and also in Teesdale. If I rightly know the species intended under this name, I have seen it in various places in Perth, Forfar, Aberdeen, and Sutherland; and I have also received it from Argyle and Forfar, labelled as denticulatum and boreale. It is like-

wise, in part or in whole, the species distributed by Professor Graham, in 1833, as H. umbellatum from Sutherland. H. corymbosum may be considered another species added to those treated in the second volume; the H. denticulatum of that volume, with which it most nearly corresponds, being excluded as a confused aggregate of this present and other species.

578. HIERACIUM DENTICULATUM (*Sm.?*) *Borr.*

Area [16].

Incognit? It may be better to expunge the sketch of distribution given for this plant in the second volume, which was certainly founded on misapplications of the name, as there suggested. In the third edition of the Manual Mr. Babington rejects the species, stating that "H. denticulatum (Sm., E. B. 2122) is now considered as a wood form of H. prenanthoides." By whom so considered? Mr. Borrer gave me a living plant from his garden, under name of H. denticulatum, which certainly appears to me, after observing it for three seasons, to be quite distinct from H. prenanthoides of English botanists; but of which I have never seen a wild specimen among the various things sent to me from Scotland, labelled under the same name. Of this plant or species Mr. Borrer writes, in 1849, "I have long known this in cultivation in Mr. Forster's garden and my own, originally (like Smith's specimens) from Scotch specimens from Dickson, and I have once gathered it wild in Glen Luss, Dumbartonshire." Here is decided and clear testimony to the fact of there being a native species to correspond with Smith's idea of H. denticulatum, in addition to H. prenanthoides. But the localities recorded in books or

on labels, nominally for this species, are too little reliable to permit of its distribution being given. Thus, for the present, I must reluctantly leave it merged under H. prenanthoides. (See vol. ii. page 62.)

HIERACII *Species.*

Narrow and peddling attempts at species-naming, by forced comparisons between isolated or aberrant forms of British species, and the descriptions or specimens of foreign authors,—instead of really investigating the limits and distinctions between true native species, on a sufficient series of examples from different situations,—are gradually reducing the Hieracia into a similar chaotic state of uncertainty, with that to which their geographical neighbours the Salices have been so un-usefully reduced. But so far as the reputed additions to our lists of British species, or subdivisions of known species, have been adopted by Mr. Babington, in the third edition of his Manual, I do not feel warranted in passing them by unnoticed. Besides the H. iricum and corymbosum, treated above, the following names in the Manual, third edition, were not used in the second volume of this work; although the species or varieties, supposed to be intended under these names, may have been there included in some instances :—

H. RUPESTRE, *All.*—Stated to have been found on Cairntoul, Aberdeenshire, at 2500—3500 feet.

H. PALLIDUM, *Biv.* and H. ANGLICUM, *Fries.*—These two, taken together, apparently correspond with H. Lawsoni of Smith, as treated in the second volume; but excluding H. Lapeyrousii (Bab. Man. edit. 2); and perhaps also

including H. cerinthoides of the Manual, edition third; the localities for the latter having likely been formerly reported as if those of H. Lawsoni.

H. OREADES, *Fries.*—Apparently not known to British botanists of the present day. "Gordale Scar, near Malham, Yorkshire, *Dill.*"

H. SAXIFRAGUM, *Fries.*—Stated in the Manual to have been found on Cairntoul, Aberdeenshire; Glen Dole, Clova, Forfarshire; Teesdale, York or Durham.

H. ATRATUM, *Fries.*—Said to have been found in the Highlands of Scotland, and on Helvellyn, Westmoreland. Partially included under the H. nigrescens (Willd.) of the second volume; but while it still remains difficult to trace a clear line or limit between the three, I believe that there is a third species somewhat intermediate in general appearance between H. nigrescens and H. murorum of that former volume.

H. MURORUM, *Linn.*—According to the Manual, found on Cheddar cliffs, Somerset; about Llyn Ogwen, Caernarvonshire; Ben Wyvis, Ross-shire. It is not the H. murorum treated in the second volume; but either is unknown to me, or was perhaps included under the species of the second volume.

H. CÆSIUM, *Fries.*—This would seem to correspond almost precisely with H. murorum of the second volume and of most English botanists and collectors. The variety "hypochœridoides," for which Mr. Babington indicates the locality of Settle only, occurs in various counties of Scotland and England, but has been usually labelled or reported under the misnomers of "maculatum" (by Mr. Lees, &c.) and "pulmonarium" (by Mr. Gardiner, &c.). The H. maculatum (Sm.) may be the H. affine (Swtz.) of the Flore de la Loire. But one of two specimens, given to me thus labelled by Mr. Lloyd, looks very like H.

rigidum, and I find that Mr. Bladon places "H. affine, Tausch," under H. rigidum. A specimen from Mr. Nyman of Stockholm, labelled as H. cæsium (Fries), is quite unlike the ordinary H. murorum of English botanists, in its lanceolate basilar leaves, with all their teeth pointing outward and forward.

H. VULGATUM, *Fries.*—Nearly the same with H. sylvaticum (Sm.) of the second volume; excluding the second and third forms there alluded to, which belong to the species, whether single or aggregate, including H. gothicum, H. tridentatum, and H. rigidum, of the Manual. The distribution of H. sylvaticum itself is not affected by the severance of those three forms.

H. GOTHICUM, *Fries.*—Judging by the localities of "Hook and Ockham, Surrey, *Mr. Watson*," given in the Manual, this is a plant which I find growing intermingled with H. sylvaticum; the two appearing dissimilar enough in their extreme states, and even in their usual states, and yet approximating so closely in some of their examples, as not to be easily distinguished. I cannot hesitate to pronounce the plants of Surrey and N. Hants identical with Swedish specimens of H. rigidum (Hartman) received from Mr. C. Hartman (the son), but apparently collected, and possibly also labelled, by Mr. Nyman of Stockholm. Assuming that the name on the labels of these Swedish specimens is correct, and there would seem strong presumption in favour of accuracy, we must make a third special application of the name to English plants; both the former applications of it being incorrect; thus, in Babington's Manual:—

H. rigidum (edit. 1) = H. tridentatum (edit. 2).
H. rigidum (edit. 2) = H. ——— ?
H. gothicum (edit. 3) = H. rigidum (Hartman !)

H. STRICTUM, *Fries*.—This is unknown to me. It is stated to occur in "Scottish mountain glens." As before observed, Mr. Babington makes the H. denticulatum (of Smith) synonymous with H. prenanthoides of his Manual, and the H. denticulatum of his own earlier editions is given as synonymous with H. strictum of the third edition.

H. CROCATUM, *Fries*.—The same with H. inuloides of the second volume, page 63.

"H. PLUMBEUM, *Fries*" has been added to the preceding, by Mr. J. G. Baker (Phytol. iv. 453). He has favoured me with a specimen so labelled from Teesdale. I brought examples of it from Aberdeenshire in 1844, but have hitherto included it under my somewhat comprehensive or expansive idea of "H. murorum" of Smith.

†. SANTOLINA ALPINA.

Area [?].

Incognit. Included in Mr. C. E. Sowerby's printed list of "plants indigenous to Britain, but not yet figured in English Botany". I have no better information about its pretended nativity in Britain.

†. CICENDIA CANDOLLEI, *Griseb.*

Sarnian. Gathered by Mr. Frederick Townsend on waste broken ground near Paradis, in the island of Guernsey, in company with C. filiformis and Radiola millegrana. (Mr. C. C. Babington, in Bot. Gaz. ii. 327.)

†. CUSCUTA HASSIACA, *Pfeiff.*
(Grammica suaveolens, *Schultz*).

Area (3).

Alien. Found on lucerne, near the town of Witham in Essex, by Mr. E. G. Varenne, in September, 1851; having very probably been brought thither with the imported seeds of the lucerne. Mr. Varenne thinks that it had been previously seen by himself in a neighbouring station in Essex, also in Herts by some other observer, many years ago. For particulars, reference can be made to the Phytologist, iv. 382.

†. HYSSOPUS OFFICINALIS, *Linn.*

Area (2).

Alien. According to Dr. Bromfield (Phytol. iii. 688) Hyssop is perfectly and abundantly naturalized on the ruins of the Abbey of Beaulieu, in the New Forest, Hants.

820. TEUCRIUM BOTRYS, *Linn.*

Area * * 3.
South limit in Surrey.
North limit in the same county.
Estimate of provinces 1. Estimate of counties 1.
Latitude 51—52. Local (Germ.) type of distribution.
Agrarian region. Inferagrarian zone.
Descends to 100 yards, less or more.

Ascends to 200 yards, more or less.

Range of mean annual temperature 48 or 47.

Native? Rupestral? Since the second volume was in print, this plant has been again found on or near Box Hill; and it is pronounced truly a native, by Mr. Borrer and Mr. Gibson. The locality is said not to be properly a part of Box Hill, "being on the eastern or Reigate side of the ravine, in a direct line between the village of Brockham and Headley Lane, and more correctly a part of Brockham or Headley Hill," according to Mr. William Bennett, in Phytol. iii. 738. (See vol. ii. page 248.)

†. ECHINOSPERMUM DEFLEXUM, *Lehm.*

Area (2).

Alien. "In the autumn of 1846, several specimens of Echinospermum deflexum were gathered near Alton in Hampshire, under a hedge which divides a small plantation, at the front of Charlton House, from the road; on the opposite side of the plantation there being a garden, from which the plant might have escaped, though my friend, from whom I received a few specimens, does not suppose that was the case". (Mr. J. G. Baker, in letter, Feb. 26, 1850.)

Xd. PULMONARIA VIRGINICA, *Linn.*

Area [2].

Extinct. According to Dr. Bromfield (Phytol. iii. 576) it would seem that P. virginica was really the plant found

by the Rev. N. Nicholls, "in the ruins of an old castle near Netley Abbey, far from any house, and apparently wild"; but that the plant found in the Isle of Wight, by Mr. Griffith, was most probably P. angustifolia. The sentence above quoted may serve as an illustration of the loose and almost quibbling manner in which such expressions as "far from any house" and "apparently wild" are sometimes used and applied by would-be-discoverers of wild plants. In this instance, the word "ruins" may suffice to balance and correct the other portion of the sentence; but in many other similar instances the misleading words only are used without any such qualification, direct or indirect.

868. Pulmonaria officinalis, *Linn.*

Area (1 2 3 * 5 6 * 8 * 10 * 12 13 14 15).

Alien. Notwithstanding the decided opinion of Dr. Bromfield (afterwards indeed more doubtfully expressed in the Phytologist iii. 577) it would seem better to consider P. officinalis and P. angustifolia separate species; the latter being indigenous in the Isle of Wight and mainland Hants, and only incorrectly reported from other counties. P. officinalis, as thus separated, and the plant so frequent in cottage gardens, has doubtless been found in many counties, more or less naturalised; but it has not been shown to be truly indigenous in any part of England. (See vol. ii. page 285.)

†. Blitum virgatum, *Linn.*

Area (14).

Alien. Fisherrow, Edinburgh, perhaps introduced with grass-seeds, certainly not with ballast. (Mr. J. T. Syme).

†. Salix dasyclados, *Wimm.*

Area 3.

Native? An unsettled addition to the British flora. It is No. 37 of Leefe's Salictum Britannicum, where it is labelled as S. acuminata of Smith (Eng. Bot. t. 1434), but from which Dr. Andersson, Author of the 'Salices Lapponiæ,' pronounces it quite distinct. For particulars, a reference may be made to the Botanical Gazette, vol. iii. page 59. Salix grandifolia and Salix pontederana may possibly be natives of Britain; for which see the volume of the Gazette cited, pages 59 (No. 36) and 62.

Salix.

Notwithstanding the expectation held out on page 386 of the second volume, I find it useless to attempt to trace the area and distribution of the several subordinate forms, more or less passing for species in this genus. It is even becoming less apparently needful or desirable; for botanists are now retracing their steps, or rather the steps of their predecessors, and are re-uniting the dissevered species. On this subject, the recent editions of the British Flora and Manual of British Botany, the views of

the Rev. J. E. Leefe, as given in the London Catalogue of British Plants, and those of the Swedish *Salicetist*, Dr. Andersson, illustrated in the Botanical Gazette, vol. iii. page 57, may be advantageously consulted by the British botanist, specially interested in the species of Britain.

1030, b. JUNIPERUS NANA, *Willd.*

Area * * * * * * 7 * * 10 11 12 * * 15 16 17 18.
South limit in Caernarvon, York?
North limit in Shetland, Orkney, Hebrides.
Estimate of provinces 8. Estimate of counties 15.
Latitude 53—61. Highland type of distribution.
Arctic region. Inferarctic—Midarctic zones.
Descends nearly to the coast level, in North Isles.
Ascends to 900 yards, in East Highlands.
Range of mean annual temperature 45—37.
Native. Ericetal, Rupestral. The localities and general distribution of J. nana cannot be yet satisfactorily distinguished from those of J. communis; though an attempt is here made towards that object, in order to meet the views of those botanists who regard the two shrubs as true and distinct species. (See vol. ii. page 410.)

1039, b. EPIPACTIS MEDIA, *Fries.*
1039, c. EPIPACTIS PURPURATA, *Sm.*

Area * 2 3 4 5 * * 8 * 10 * 12 * 14.
South limit in Sussex, Kent, ——— ?
North limit in Linlithgow, ——— ?
Estimate of provinces 12. Estimate of counties 20.

Latitude 51—56. English type of distribution.
Agrarian region. Inferagrarian—Midagrarian zones.
Descends to the coast level, in Thames or Channel.
Ascends to 100 or 200 yards, in England.
Range of mean annual temperature 50—47.

Native. Sylvestral. Whether or not this be deemed a species distinct from E. latifolia, the recorded localities of the two are so thoroughly mingled in books, that it is impossible at present to assign them respectively to the species or variety really found in places on record for E. latifolia; a few of the stations truly belonging to neither, but to E. ovalis only. Thus, for the present, the distribution of E. latifolia, as given in the second volume, page 417, must be understood as founded upon the localities of that species, more or less mingled with those of E. media (with purpurata) and E. ovalis. And the distribution of the two latter, as here set forth, will be less full and complete than it should be; being founded upon a limited number of localities, perhaps much fewer than the reality. (See vol. ii. page 417.)

1039*. Epipactis ovalis, *Bab.*

Area * * * 4 5 * 7 * * 10 * 12 * * * * 17.
South limit in Hereford, Norfolk?
North limit in Sutherland.
Estimate of provinces 8. Estimate of counties 12.
Latitude 52—59. British (?) type of distribution.
Agrarian region. Inferagrarian—Superagrarian zones.
Descends to the coast level, in Ouse?
Ascends to 200 or 300 yards, in Humber.
Range of mean annual temperature 49—46.

Native. Rupestral? Pascual? See the remarks on E. ovalis in vol. ii. page 417; to which may be added a confirmation of the locality at the Ormeshead, Caernarvonshire, and the newly ascertained station of the Doward Hills, Herefordshire; the latter adding the province of the Severn to those previously on record. The province of Trent, and perhaps some others, would also seem likely; but as yet any estimated census can be little better than guess-work. I suppose this to be the E. atrorubens of continental botanists; a prior name than E. ovalis, but one that has perhaps been applied to more than one species. (See vol. ii. page 417.)

Lilium pyrenaicum, *Gouan.*

Area (1).

Alien. Discovered by Mr. George Maw, extending for a length of about 50 yards, on a bank on the west side of the road or lane leading from South Molton to Molland, North Devon, and at about a mile and a half from the latter place. (Bot. Gaz. ii. 305; Phytol. iii. 988.)

†. Gymnogramma leptophylla, *Desv.*

Area [15].

Incognit. Very unexpectedly by myself this austral fern has been reported as a native of Scotland, while the present volume of the Cybele is under press. The report appears on the cover of the Phytologist, for February, 1852, and will perhaps be repeated on some page of Vol. iv. later than 464, which is the last page of that February No. The "supposed discovery" is thus announced:—

"When I was in Madeira a lady of the name of Veitch, whom we knew there, showed me a small dried specimen of a fern which she had gathered in Scotland, I think in Aberdeenshire, and which was, to all appearance, precisely the same as the Gymnogramma leptophylla of Madeira.—*William Tanner, Ashley Grange, Bristol,* Dec. 22, 1851."

This seems pretty strong and direct testimony to a fact, which is much at variance with the preconceived opinion that a botanical geographer would have formed on the question of probable occurrence. But two sources of error are obvious as possibilities, not to say as probabilities. In the first place, Mrs. or Miss Veitch may have inadvertently mingled specimens from Scotland and Madeira, or may have misplaced a label, or mis-remembered a locality, &c. In the second place, either the lady in question or Mr. Tanner may have been mistaken in regard to the identity of the species. I thus consider the report not sufficient for reliance, in the absence of other circumstances tending towards corroboration of the fact. The Editor of the Phytologist ("E. N.") thinks "there is no climatal or geographical improbability to be urged as an objection to the finding this pretty little fern in Aberdeenshire." With that opinion I am unprepared to concur; among other reasons, because there is no instance of a species truly indigenous in Scotland and Madeira, but unknown in England and Ireland. But while this page is in type, Mr. Newman favours me with an argument in support of his view; namely, "I think the *metropolis* of this fern is the Alps of Europe: Madeira is an outlying station. The same facts obtain with Polypodium alpestre: metropolis Europe, alpine; found outlying in Scotland and Teneriffe."

II.—NOTES AND CORRECTIONS

RELATING CHIEFLY TO

SPECIES TREATED IN FORMER VOLUMES.

1. *Clematis Vitalba*, vol. i. page 70.

The north limit may be continued westward into Pembroke, on the authority of Mr. Babington. Possibly this shrub may be truly indigenous in the Trent province, so far as its most southern county, Leicester, is concerned; where the Clematis occurs very locally, but is perhaps native, as I am informed by the Rev. Andrew Bloxam.

3. *Thalictrum minus*, vol. i. p. 71.

The south limit may be continued westward into Cornwall, where this plant has been found by the Rev. C. A. Johns (Phytol. ii. 907). Perhaps it ascends to the mid-arctic zone, on Snowdon. T. minus (of British botanists) is probably an aggregate species. But if so, the stations and distribution of its included unit-species cannot be separated at present, unless very incompletely; and some of them may even be on record as belonging to T. majus. In the Manual of British Botany two subordinate species are cut out of T. minus; namely, "T. flexuosum (R. Fries)" stated to have been found by Mr. Hort, at Cheddar in Somerset; and "T. saxatile (DC.)", synonymous with T. Kochii of Fries, equally found by the same observing botanist at Cheddar, and also at Brathay in

Westmoreland. Three other alleged species have likewise been reported as British or Irish; namely T. pubescens (Schreb.) given as a variety of T. minus in the Manual; also T. nutans and T. calcareum (Jord.), one or both, or something intermediate between them, found in Sligo, Ireland, by Mr. Ball; and by him reported, with explanatory and suggested remarks, in the Botanical Gazette, vol. i. p. 312.

4. *Thalictrum flavum*, vol. i. p. 73.

Provinces 6 and 12 may now be added in the area of this species; that of South Wales on the authority of Mr. Motley; that of the Lakes on the authority of Mr. Daniel Oliver, who gives me the vicinity of Arnside as a station for the plant, either within or closely upon the borders of Westmoreland. Still unreported from Cornwall. The north limit is extended westward to Toward Point, Argyle, by Professor Balfour.

5. *Anemone Pulsatilla*, vol. i. p. 74.

The county of Huntingdon may be added to the list, on the information of the Rev. M. J. Berkeley.

8. *Anemone ranunculoides*, vol. i. p. 75.

The counties of Leicester and York are now added to those reported for this plant of shrubberies and cottage gardens.

9. *Adonis autumnalis*, vol. i. p. 76.

Mr. Withers estimates the altitude at which this plant grows on Odd Down, near Bath, to be about 200 yards. I know not whether that station is within the Peninsula province; nor whether the plant was more than a chance straggler there.

11, b. *Ranunculus circinatus*, vol. i. p. 79. (No. 12).

Province 9 to be added to the area, on authority of the Flora of Liverpool by Dr. Dickinson. Apparently still

unrecorded for Cornwall or Devon, but reported southwards to the Isle of Wight, Sussex, Kent, and Somerset.

11, c. *Ranunculus fluitans*, vol. i. p. 78. (R. peucedanifolius).

Provinces 1 and 6 to be added to the area; that of Peninsula on the authority of Rev. W. H. Coleman; that of South Wales on the authority of Mr. Motley. Ascertained southwards to the Isle of Wight, Kent, Somerset; but perhaps not yet found in Cornwall or Devon. Doubtful whether it has been found farther north than Berwickshire. Although the name of "fluitans" has been much misapplied to states of R. aquatilis wanting the floating leaves, it is perhaps less subject to doubt, and certainly more in use, than that of "peucedanifolius." I would therefore discard the latter, whether it did or did not intend the species "fluitans."

13. *Ranunculus hederaceus*, vol. i. p. 80.

The south limit may be carried westward into Cornwall, on authority of Mr. Pascoe.

13*. *Ranunculus cœnosus*, vol. i. p. 80. (R. Lenormandi).

Provinces 2, 6, 7, 13, to be added to the area. South limit in Devon, Hants, Sussex; probably also in Cornwall and Kent. North limit in Dumfries, so far as yet known to me. Existing reports or records of stations seem to indicate a closer approximation to the Atlantic than to the British type of distribution for this species. And if it shall eventually be found so thinly scattered in the eastern provinces, as now appears to be the case, the comital estimate may be reduced to 40, and the provincial estimate to 12.

16. *Ranunculus Lingua*, vol. i. p. 84.

The south limit may be extended into Cornwall, on authority of the Rev. C. A. Johns and Mr. F. P. Pascoe.

18. *Ranunculus auricomus*, vol. i. p. 86.

The south limit is extended westward into Cornwall, by Mr. G. S. Gibson and the Rev. C. A. Johns.

21. *Ranunculus bulbosus*, vol. i. p. 88.

The north limit may be extended westward to Islay, on faith of a specimen gathered at Laggan by Mr. W. A. Stables. It has never been observed in Orkney by Mr. J. T. Syme, and cannot yet be received as indigenous in the province of North Isles.

22. *Ranunculus hirsutus*, vol. i. p. 89.

Province 12 may be added in the area, on faith of Mr. Aiton's list of Plants in Cartmell and Furness, given in 'Jopling's Sketch.' The north limit reaches Forfarshire, on authority of Mr. Croall, in Gardiner's Flora of that County.

23. *Ranunculus sceleratus*, vol. i. p. 90.

Province 12 to be added in the area, on faith of Mr. Aiton's list, above mentioned. The south limit extends into Cornwall, according to Mr. Pascoe.

26. *Caltha palustris*, vol. i. p. 91.

Included in Mr. Pascoe's list of Cornish plants, which thus authorizes the extension of the south limit into Cornwall. A misprint occurs under the head of this plant, at the middle of page 92, by the substitution of a period stop instead of a comma after the words "boggy soil"; which destroys the sense of the passage. On looking at Caltha radicans, as cultivated in gardens, and the ordinary state of C. palustris, wild in marshy ground in the southern counties of England, it is truly difficult to believe them only varieties of one species; but the intermediate examples in my herbarium, brought from the Highlands of Scotland, appear equally to forbid their separation into two species. The argument derived from the existence

of intermediate forms or links of connexion, must be more weighty than that afforded by differences between extreme forms only. The seeds of C. radicans have proved imperfect and non-vegetating with me. Has any other cultivator been more successful?

28. *Eranthis hyemalis*, vol. i. p. 93.

Occurs in the grounds of Wimbledon Park, Surrey, along with the Anemone apennina, doubtless planted there originally. My herbarium is indebted to Mr. Henry Taylor, for beautifully dried specimens from this locality.

29. *Helleborus viridis*, vol. i. p. 94.

Mr. Daniel Oliver has kindly sent me the leaves of this species, gathered in August, near Arnside Knott, probably within Westmoreland, where the plant is stated by him to have "quite the appearance of a native, certainly a denizen." It would thus seem that province 12 may be included in the area of the plant, regarded as a denizen or possible native, and the county of Westmoreland be taken in tracing the north line or limit. Mr. Pascoe includes this species in his list of plants seen in Cornwall, but it is marked as an uncertain native.

30. *Helleborus fœtidus*, vol. i. p. 95.

An error of the pen occurs in the fifth line from the bottom of page 95, which destroys the meaning; the name 'fœtidus' being there written instead of 'viridis.'

31. *Aquilegia vulgaris*, vol. i. p. 96.

Mr. Croall would extend the native limits of this plant northward to Forfar or Kincardine; as we are told in the Flora of Forfarshire, on his authority, that "in the Den of Morphie it appears to be indigenous, covering some acres of steep brae never cultivated, and at a considerable distance from houses, and where I do not think it likely that any have ever been." Remarkably enough, this is

still branded as a non-British species, in the last edition of the British Flora, while the far more questionable species of Helleborus are given there as unchallenged natives. What does this random marking prove? Not a philosophic doubt arising from due research or inquiry, I fear, but only the accuracy of an opinion expressed in this present volume, page 5, to the effect, that the attention of Author and Editor of the British Flora, has been so far and so long withdrawn from British botany, that their opinions must now be formed on imperfect knowledge, when relating specially to the botany of Britain; and, consequently, that they cannot be deemed authoritative.

32. *Delphinium Consolida*, vol. i. p. 97.

The discrepancy between the reports of Mr. Flower and Mr. Lees, relative to the existence of this plant on the shores of Swansea bay, may perhaps be accounted for by an observation from Mr. Joseph Woods, in Phytologist iii. 1060, where he writes that, "The corporation of Swansea, it seems, sometimes take turf from the sand-hills and replace the soil with some they want to get rid of from the neighbourhood of the town, and in these spots I noticed Calendula officinalis, Koniga maritima, Delphinium Consolida, a cultivated Pimpinella, and other garden plants." This passage suggests a commentary on the value of Mr. Lees's reports about finding ordinary garden plants "truly wild," and will so far explain my own evident reluctance to rely upon the unconfirmed reports or opinions of Mr. Lees, in reference to the nativity of species or the genuineness of stations. The reluctance does not arise from distrust of that gentleman's sincerity and good faith, but from doubts of the botanist's circumspection and exactness. I cannot yet enter this plant even as an established 'Colonist' in South Wales, much less as a true native.

34. *Pæonia corallina*, vol. i. p. 99.

This plant should perhaps be considered as an alien, rather than a denizen, and be thus virtually excluded from our proper flora. Mr. Flower thinks the altitude about 200 feet; the plant growing only in one spot, with Allium ampeloprasum. Steep Holms islet, according to Mr. Flower, rises to about 490 feet high.

35. *Actæa spicata*, vol. i. p. 99.

Mr. J. G. Baker gives me stations for this plant, which imply a descent nearly to the sea level, and an ascent to 300 yards, or upwards; the zonal range being Midagrarian—Superagrarian.

36. *Nymphæa alba*, vol. i. p. 100.

The counties of Dorset and Sussex may be added in the south limit, as being more restrictedly southern counties than Hampshire, which extends so much farther northward. A rule to that effect is explained on page 68 of this current volume; but it was not invariably acted upon in the first volume. Mr. E. G. Varenne mentions Cornard Mere, Suffolk, as a locality for the 'minor' variety.

41. *Papaver dubium*, vol. i. p. 104.

Mr. Pascoe marks this as a plant reported to occur in Cornwall, although not observed in the county by himself.

44. *Meconopsis cambrica*, vol. i. p. 106.

The south limit may be extended to Cornwall, on authority of the Rev. W. S. Hore and Rev. C. A. Johns. The counties of Glamorgan (Mr. Dillwyn) and Radnor (Mr. Westcombe) may be added to the native list. Mr. Thomas Clark gives me the height of stations on Cheddar Cliffs in Somerset, from 350 to 600 feet. Perhaps the range of mean temperature might be raised to 49 or 50 degrees; certainly so, if the plant occurs wild at a slight elevation in Cornwall.

Xd. *Glaucium phœniceum*, vol. i. p. 109.

The line of "Area [* 2 3 4]" has been accidentally omitted. The Flora Metropolitana, list of included species, is my untrusty authority for the third province.

48. *Corydalis claviculata*, vol. i. p. 109.

The south limit runs into Cornwall, on the authority of Mr. Pascoe. My notes of its localities now include 48 counties, so that possibly the comital estimate of 60 might prove to be nearer truth than that of 50, if we had complete county lists on which to found a census.

Xd. *Corydalis solida*, vol. i. p. 110.

Provinces 2 and 10 may be added in the area, but still only for the plant as a straggler from gardens. Mr. J. G. Baker writes that it "is a sad pest to some of our (Thirsk) gardens, and is therefore frequently thrown out, and easily takes root and vegetates."

50. *Fumaria capreolata*, vol. i. p. 111.

From this was separated one form or variety, published under the name of F. agraria; erroneously so, it would seem. In the third edition of the Manual, that form stands as a variety of F. capreolata, under name of media.

55. *Cakile maritima*, vol. i. p. 114.

Province 8 is to be added in the area, on authority of a list of Lincolnshire plants given to Mr. Westcombe by Mr. J. H. Thompson.

56. *Crambe maritima*, vol. i. p. 115.

The south limit is to be extended into Cornwall, on faith of a specimen seen by Mr. Pascoe, though gathered by some other botanist.

57. *Coronopus didyma*, vol. i. p. 115.

Province (9) may be added to those in which this species has been found half-wild. Is it native or introduced to the neighbourhood of Bristol?

60. *Thlaspi arvense*, vol. i. p. 117.

The south limit may be continued into Cornwall, on authority of the Rev. W. S. Hore.

62. *Thlaspi alpestre*, vol. i. p. 117.

The existence of this plant in the county of Devon still remains unverified, and it might be safer to reject the province of the Peninsula from the area. Some degree of doubt must be considered to attach to the province of South Wales also; a doubt that is again somewhat increased by the circumstance of my receiving specimens of Lepidium Smithii, labelled as T. alpestre, by a botanist resident in that province, though not the original authority for T. alpestre there. Like various other old species, formerly reputed single, T. alpestre has been recently subdivided into three or more. T. occitanum (Jord.) and T. virens (Jord.) are noticed in the Manual; the former from provinces 7 and 10, as a variety of T. alpestre (Linn.); the latter (T. alpestre of Smith) distinguished as a species, with the habitat of Matlock, Derbyshire, a locality which is not given at all for T. alpestre of the Manual, as separated from T. virens.

64. *Hutchinsia petræa* (Br.), vol. i. p. 120.

It is scarcely necessary to say that the authority given for the name of this plant, "*Linn.*", is an inadvertence of transcription, which the anachronism would probably suffice to indicate. The geographic type of the plant is certainly peculiar and exceptional;—Highland or Scottish, by tendency to the hilly districts;—English, by early northern limit in latitude;—Atlantic, by prevalence on the western side of the island.

65. *Teesdalia nudicaulis*, vol. i. p. 121.

Found by Mr. G. R. Tate on the summit of Yevering Bell, Northumberland; the altitude of which I do not know, but suppose it considerably higher than "300

yards", which is the indication given in the first volume. The county of Aberdeen may be added to the north limit, and that of Sussex to the south limit, according to the rule explained on page 68.

66. *Iberis amara*, vol. i. p. 122.

Provinces (7 8) may be added to the area; but only for the plant as an alien, or waif from cultivation.

68. *Lepidium Draba*, vol. i. p. 124.

The counties of Surrey (Mr. Borrer!) and Essex (Mr. Varenne!) may be added to those casually producing this species.

72, d. *Cochlearia anglica*, vol. i. p. 128.

Province 12 may be added in the area, on faith of Mr. Aiton's list. And the south limit may be continued into Cornwall, on authority of Mr. Pascoe.

73. *Armoracia rusticana*, vol. i. p. 129.

An erudite paper on the names and native habitat of this plant, from the pen of M. Alphonse DeCandolle, was published in the Bibliothèque Universelle de Genève, 1851, and translated in the Botanical Gazette, vol. iii. p. 141. From a series of data, admirably chosen and arranged so as to bear clearly and strongly upon the question of country, M. DeCandolle concludes that the species was probably of eastern origin, extending from Finland into European Turkey and South-east Russia, and that it is only an immigrant or introduced alien in western Europe.

74. *Subularia aquatica*, vol. i. p. 129.

Province 13 is to be added in the area, on authority of Mr. William Stevens, in Phytologist iii. 390. The provincial estimate will thus be raised to 5, and the comital estimate may be taken at 12 or 15. Among 13 counties on record it is probable that 11 may be correct;

and others may still be discovered for a plant so very likely to be overlooked by collectors.

77. *Draba incana*, vol. i. p. 131.

Province 8 may now be certainly added to the true area; Mr. Wardale having sent specimens from Derbyshire to the Botanical Society of London. That county will be substituted for Yorkshire in the south limit. Professor Balfour found this species at the sea level, so far south as Islay, in the West Highland province. It is scarcely necessary to remark that the records of this species and of the more arctic D. rupestris having been found in Hampshire, by the Rev. S. Palmer (Mag. Nat. Hist. ii. 276), must be erroneous.

79. *Draba verna*, vol. i. p. 133.

The south limit extends into Cornwall, according to Mr. Pascoe's list. I am still without note of its occurrence in the West Highland province.

82. *Alyssum calycinum*, vol. i. p. 135.

Province (2), with the counties of Hants, Norfolk, Roxburgh, may now be added to the area, &c. of this plant, which I cannot yet feel warranted in classing among the truly British. The remarks on the stations for it in the Flora of Forfarshire, published since the first volume of the Cybele was written, only tend to confirm those made on page 135 of that volume.

84. *Cardamine amara*, vol. i. p. 137.

Provinces 1 and 16 may be added to the area; that of the Peninsula on authority of Mr. Pascoe; that of West Highlands on authority of the Flora Glottiana. The south limit will be extended to Cornwall, and the north limit to Dumbarton (Mugdock Castle), on the same authorities. The mean temperature may also be raised to 51, if not to 52, for a plant growing near St. Austell, Cornwall.

85. *Cardamine pratensis*, vol. i. p. 138.

The south limit of this species also is extended to Cornwall, by the same authority.

87. *Cardamine impatiens*, vol. i. p. 138.

Province 6 to be added in the area, on authority of Dr. J. D. Hooker, who found the plant two miles and a half from Merthyr, on the road to Brecon. Ascends to 200 yards, or upwards, in North Wales. In the Botanical Gazette, ii. 38, Mr. F. P. Pascoe reports this species as having been found by Mr. Couch at Polperro in Cornwall, but no Cornish specimen would appear to have been seen by Mr. Pascoe himself.

88. *Arabis thaliana*, vol. i. p. 140.

The south limit extends into Cornwall, according to Mr. Pascoe's list, where it is entered on authority of Mr. J. Ward.

92. *Arabis hirsuta*, vol. i. p. 143.

The south limit is to be extended into Cornwall, from the north coast of which the plant is reported by Mr. Pascoe.

94. *Turritis glabra*, vol. i. p. 144.

Provinces 15, 16 may be added as very probably, if not certainly, within the area. Bowling Bay, mentioned on page 144, is situate on the north side of the Clyde, below Glasgow. Dr. Dewar sent specimens to the Botanical Society of London, gathered in "Glen Devon"; and "Redgorton (Perthshire)" is given as a locality for this plant in the British Flora, last edition. The north limit would thus seem to be in Perth and Dumbarton shires.

95, b. *Barbarea arcuata*, vol. i. p. 145. (No. 96.)

The counties of Worcester and Forfar, and perhaps that of Lancaster, may be added to those reported for B. arcuata; but the plant must still remain as a variety of B. vulgaris in this work.

98. *Nasturtium officinale*, vol. i. p. 147.

The existence of this species in Orkney is confirmed by Mr. J. T. Syme.

99. *Nasturtium terrestre*, vol. i. p. 147.

Province 12 is to be added in the area, Mr. Daniel Oliver having kindly sent me a specimen gathered in the 'Meadows' near Wigton. The Rev. C. A. Johns found it in Cornwall.

100. *Nasturtium sylvestre*, vol. i. p. 148.

The south limit is to be extended into Cornwall, where Mr. Pascoe finds this species. It certainly grows in Fifeshire, but whether or not its occurrence there will properly warrant the addition of province 15 to the native area I am still unable to say with confidence.

103. *Sisymbrium Irio*, vol. i. p. 150.

Province 6 is to be added in the area, on authority of Mr. C. C. Babington, who has favoured me with a specimen gathered near Swansea in Glamorgan. If native or denizen there, the south limit may be carried westward into that county. On the whole, the type of distribution comes nearest the English, though too local and irregular for certainty.

105. *Sisymbrium polyceratium*, vol. i. p. 152.

Mr. Varenne informs me that Gerarde mentions this species as growing at Little Baddow, Essex. I have not a copy of the work at hand to refer to in a more direct manner.

106. *Erysimum cheiranthoides*, vol. i. p. 152. (No. 105.)

Province (6) may be added in the area, on the authority of Mr. C. C. Babington and Mr. James Motley, who report the plant in Caermarthen and Pembroke,—whether to be held as colonist or alien there, I do not know.

Xd. *Erysimum virgatum*, vol. i. p. 153. (No. 106.)

This is stated in the second edition of Mr. Babington's Manual, to be no longer found about Bath.

109. *Cheiranthus Cheiri*, vol. i. p. 155.

Provinces (6) and (9) may be added to the area of this alien species; which, strangely enough, Mr. Babington enters in his Manual as an unchallenged native.

114. *Brassica campestris*, vol. i. p. 158.

Provinces 6 and 9 may be added in the area; that of South Wales on authority of Mr. C. C. Babington and Mr. James Motley; that of Mersey on authority of Dickinson's Flora of Liverpool. Mr. Pascoe finds this and B. Napus common in Cornwall, "subject to the usual doubts about these species."

114*. *Brassica Rapa*, vol. i. p. 160. (No. 114, b.)

Provinces (6) and (16) may be added to those on record for this plant of cultivation, if worth while to add to records of no probable use.

115. *Brassica Napus*, vol. i. p. 160.

Provinces 7 and 9 may be added in the area, on authority of the Floras of Anglesea and Liverpool. For the county of Cornwall, see 'B. campestris' above. It would perhaps be the better plan to consider that we have only two wild species of Brassica in Britain, B. oleracea the denizen and B. campestris the colonist; the cultivated Turnip and Rape being varieties of the latter, and not wild plants.

117. *Sinapis alba*, vol. i. p. 161.

Provinces 6 and 9 may be added in the area; the former on authority of Mr. Motley and Dr. Falconer; the latter on authority of Dickinson's Flora of Liverpool. It would perhaps be the better course to enter this species as an alien in the two most northerly provinces (17 18) at least.

118. *Sinapis nigra*, vol. i. p. 162.

Provinces 9 and 10 may be added in the area; that of Mersey on authority of Mr. J. T. Syme and the Flora of

Liverpool; that of Humber on authority of Mr. J. G. Baker, who finds this species frequent about Thirsk in Yorkshire.

119. *Sinapis incana*, vol. i. p. 163.

From the Supplement to English Botany, vol. iii. No. 2843, it would seem that this plant has once occurred in England, introduced with foreign seeds to the county of Sussex, where it was observed by Mr. Borrer.

120. *Sinapis tenuifolia*, vol. i. p. 163.

The south limit may be extended to Cornwall, on faith of a specimen communicated to Mr. Pascoe, by the Rev. C. A. Johns.

121. *Sinapis muralis*, vol. i. p. 164.

Reported in Cornwall by Mr. E. T. Bennett and Mr. F. P. Pascoe; the latter not writing with confidence about its true nativity or even denizenship there (Bot. Gaz. ii. 38). I am indebted to Mr. Purchas for a specimen from Glamorgan; and Mr. Joseph Woods reports that it is common about Swansea (Phytol. iii. 1060). The characters given in books, as a diagnosis, are apt to mislead botanists, and thus cause the wrong species to be recorded from some localities. The lower part of the stem of D. tenuifolia is occasionally, if not usually, somewhat hispid, though much less so than that of S. muralis; and hence the word "glabrous" should be omitted or qualified in the book character (Bab. Man. and Brit. Flora) of D. tenuifolia, as it misleads when small specimens or branches only are examined in the herbarium. The size and ramification of the old plants usually distinguishes D. tenuifolia in its living state.

122. *Sinapis Cheiranthus*, vol. i. p. 165.

So far as England is concerned, the species thus named would seem to be simply S. monensis. As above men-

tioned with respect to S. tenuifolia, the stem appears to vary in being glabrous or hispid.

123. *Raphanus Raphanistrum*, vol. i. p. 166. (No. 124.)

The south limit extends to Cornwall, where Mr. Pascoe and Mr. Gibson report the plant.

124. *Raphanus maritimus*, vol. i. p. 167. (No. 124, b.)

I have a specimen gathered at Toward Point, Argyleshire, by Mr. William Gourlie; but in regard to latitude this station is not more northerly than the Isle of Bute.

125. *Reseda Luteola*, vol. i. p. 168.

Province 6 to be added in the area, on authority of Mr. Babington's list of Pembroke plants.

126. *Reseda lutea*, vol. i. p. 169.

Province 7 may be added in the area, without the inclosure for doubt of its existence there. I saw a few plants of it, near a lime-kiln, on the north coast of Fife, where it might be native, or might have been brought from a distance with the stone for burning. Mr. Pascoe and Mr. Gibson find it in Cornwall.

127. *Reseda fruticulosa*, vol. i. p. 170.

Provinces (10 11) may be added to those in which it is reported to have been found partially wild.

128. *Helianthemum vulgare*, vol. i. p. 170.

Possibly the manner of indicating the north limit by counties for this plant, and in several other similar instances, may mislead readers. In giving "Ross-shire and Lanarkshire", I would convey an intimation that the plant is known to extend northward to Lanarkshire on the west side of Britain, and northward to Ross-shire on the east side; but by no means to imply that it does not occur in various other (eastern) counties between Ross and Lanark in latitude. It might have been a clearer mode in this case, to have named three counties, as "Ross,

Aberdeen, Lanark"; a mode that was often followed in treating the later species of the Cybele. In point of fact, the ascertained limit of this species, traced by counties, runs from Eastern Ross through Moray, Banff, Aberdeen, Kincardine, Forfar, Perth, Stirling, Lanark, Kirkcudbright; but likely enough it will be yet found in some places to the westward of those counties.

129. *Helianthemum canum*, vol. i. p. 171.

Found by Mr. Thomas Westcombe, near the Land's End, Cornwall, according to a record by Mr. F. P. Pascoe, in the Botanical Gazette, vol. ii. p. 38. But Mr. Westcombe did not bring away any specimen; and as the locality is not rendered very probable by the distribution of the species, as otherwise known, the safer course seems to be that of holding it doubtful for the present. Mr. T. B. Flower informs me that the alleged locality of Penpole Rocks (not Penpool, as printed) in Gloucestershire, was certainly an error.

130. *Helianthemum polifolium*, vol. i. p. 172.

Mr. Flower estimates the altitude of the station on Brean Down, at 150 or 200 feet.

131, b. *Helianthemum Breweri*, vol. i. p. 173.

I fear this must be re-united to H. guttatum. I am informed that a second habitat, county of Caernarvon, has been discovered for one of the forms; probably the H. guttatum, as having spotted petals.

134. *Viola hirta*, vol. i. p. 176.

Province 12 may be added in the area, on authority of Mr. Aiton's list of plants; published in Jopling's Sketch of Cartmel and Furness. I am not able to say whether the list can be always confidently relied upon; but there is in its favour that sort of internal evidence which is afforded by the circumstance of the species enumerated

being, with few exceptions, those which might have been expected to grow in the Lake province, or which were already known elsewhere in that province.

135. *Viola canina*, vol. i. p. 177.

This corresponds with Viola sylvatica of the third edition of Babington's Manual, and with V. canina of Gerarde and Smith. (See page 320 of this volume.)

137. *Viola lutea*, vol. i. p. 181.

The county of Pembroke may be added to the south limit, as more westerly than Monmouth, on authority of Mr. Babington, who found the plant in a low situation, near St. David's. It may thus be said to descend to the midagrarian zone, if not to the inferagrarian zone.

136, c. *Viola Curtisii*, vol. i. p. 182. (No. 137, c.)

Mr. Babington, in the third edition of his Manual, places the yellow V. Curtisii (Forster) as a variety of V. lutea, while the purple V. Curtisii (Mackay) is placed as a variety of V. tricolor. But the stipules are alike in both the Devonian or yellow, and the Cestrian or blue, violets of the sand hills on the English coast; and I think these two cannot be satisfactorily disjoined, so as to be referred to different species. The coast plants are perennial; which indeed is hardly a distinction, for the V. tricolor of the corn-fields, though short-lived, and frequently dying off in winter, is not strictly an annual species.

139. *Drosera intermedia*, vol. i. p. 184. (D. longifolia.)

It is better to cease any use of the name 'longifolia,' which intended both intermedia and anglica, or the latter only; and it thus becomes a source of frequent error in its use.

140. *Drosera anglica*, vol. i. p. 185.

Mr. J. T. Syme finds this species in Orkney, but not D. intermedia; and a specimen of it exists among the Orkney

plants of Dr. Gillies, several times mentioned in this work. The suggestion made in the first volume, that it is the D. "longifolia" of Shetland, Orkney, and some other northern habitats, thus seems so far confirmed. Dr. Bromfield would seem to have considered the evidence sufficient to establish this species as a native of Hants (Phytol. iii. 338); but Dr. B. had an evident anxiety to make the Hants list as long or as numerous as possible; and he was easily satisfied with statements, if their tendency was to admit rather than to question species in Hampshire. There is, however, no decided improbability of its occurrence in the county, to set off against the very insufficient evidence hitherto adduced in proof thereof.

141. *Polygala vulgaris*, vol. i. p. 186.

Another name has been added since the first volume was in print, for an alleged variety or a variation of this species; but which seems to have no real difference from P. vulgaris, as ordinarily understood by English botanists.

142. *Frankenia lævis*, vol. i. p. 186.

Mr. Pascoe saw this in Cornwall, "on an old wall at the Mount [St. Michael's ?]; certainly planted."

143. *Elatine hexandra*, vol. i. p. 188.

Province 16 may be added in the area, on authority of Professor Balfour, who reports the plant as found in the isle of Bute. Besides this, the county of Caernarvon (Mr. C. C. Babington) and perhaps that of Kent (Sherard ?) may be added to those enumerated in volume first.

149. *Dianthus cæsius*, vol. i. p. 192.

According to Mr. Thomas Clark the altitude on Cheddar runs from 50 to 250 yards. Mr. Aiton reports this species, "very rare, on the limestone rocks in Furness"; but I fear to trust to this record unless verified afresh. (See a remark on Mr. Aiton's list, at page 338.)

150. *Dianthus deltoides*, vol. i. p. 192.

Province 9 to be added in the area, on faith of a specimen communicated to Mr. J. G. Baker by Mr. H. E. Smith.

Xd. *Saponaria vaccaria*, vol. i. p. 192.

Provinces (5) and (15) may be added to those that are reported to have casually produced this species, doubtless from imported seeds.

154. *Silene Otites*, vol. i. p. 196.

Province 3 may be added to the true area, on authority of Mr. E. G. Varenne, who has found the plant in Essex. The latitude may in consequence be altered to 51—53; and the south limit be indicated in the county mentioned.

156. *Silene nutans*, vol. i. p. 198.

Province 1 may be added in the area, on authority of Mrs. Russell, who sent specimens from Devon to the Botanical Society of London. Certainly found in the Isle of Wight. Hither also is to be referred the plant of the Kentish cliffs, on faith of specimens sent thence by Miss Harvey to the Botanical Society of London. S. italica and patens are names only for an introduced species, it would appear, and not applicable to the plant of Kent.

157. *Silene noctiflora*, vol. i. p. 201.

The south limit may perhaps be indicated in Hants, Sussex, Kent; but the first county remains uncertain; two species, nutans and noctiflora, having been separately reported from one of the two stations in Hants; and the second station for S. noctiflora being doubtful. (See Phytol. iii. pp. 213 and 291.)

158. *Silene conica*, vol. i. p. 202.

Of this plant Mr. Gardiner remarks in his Flora of Forfarshire, that it grows at Montrose Links, "plentiful in some seasons, in others scarce."

159. *Silene acaulis*, vol. i. p. 203.

Mr. Syme informs me that it is abundant in Hoy, Orkney, descending so low as 40 or 50 yards above the sea; so that it may be deemed almost a plant of the coast level in latitude 60; and the temperature for it may be raised to 45, if not to 46.

161. *Lychnis Viscaria*, vol. i. p. 205.

Provinces 6 and 13 may be added in the area; and the counties of Radnor, Kirkcudbright (Mr. Peter Gray), and Stirling (Mr. William Gourlie!), added to those before enumerated. The census is thus raised to 5 provinces, and to 9 counties. With regard to Radnorshire, I may quote a passage in a letter of December, 1850, from Mr. W. H. Purchas;—"Mr. Bennett had specimens of Sedum Forsterianum, Lychnis Viscaria, and Scleranthus perennis, sent to him from the Stanner Rocks, a small rocky hill near Kington. The county boundary runs over the lower part of the hill, and hence the plants must, I suppose, grow in Radnorshire. Mr. T. Westcombe has been there, and confirms the accuracy of the above names." The Scleranthus perennis is quite an unexpected plant for the locality thus indicated.

166. *Mœnchia erecta*, Sm., vol. i. p. 208.

The north limit may be carried into Northumberland, on the faith of specimens from Mr. G. R. Tate, collected on Spindlestone hills by Mr. William Richardson. The latitude will thus become 50—56.

167. *Sagina procumbens*, vol. i. p. 209.

"This plant is scarce in Cambridgeshire, as Mr. Babington has only met with it in the Cambridge Botanic Garden; where it was probably introduced, and I have not yet seen a specimen from the county." (Rev. W. W. Newbould.)

168. *Sagina maritima*, vol. i. p. 209.

Orkney may be named in the north limit, instead of Sutherland, on the authority of Mr. J. T. Syme. Mean temperature 52—45.

169. *Sagina apetala*, vol. i. p. 210.

From this species Mr. C. C. Babington separates a Sagina ciliata (Fries); the localities of which are not as yet distinguishable from those of S. apetala, if the two plants themselves can be so distinguished.

170*. *Sagina subulata*, Wimm., vol. i. p. 212. (Spergula.)

Provinces 6 and 9 may be added in the area; that of South Wales on authority of Mr. Babington; that of Mersey on authority of Mr. Brent in the Flora of Liverpool. It is hardly needful to remark that Sagina saxatilis, subulata, and nodosa, of the third edition of the London Catalogue, are the Spergula saginoides, subulata, and nodosa, of the former editions; or to say that the authority "*Linn.*" after the name of Spergula subulata in volume first, page 212, is an error of transcription for "*Swartz*".

173. *Honckeneya peploides*, vol. i. p. 216. (Arenaria, 175.)

There is yet no authority to be cited for the occurrence of this plant on the coast of the Severn province. As both Dr. Arnott and Mr. Babington separate this plant from the genus Arenaria, and from which it differs considerably in general appearance, as well as somewhat technically, I have deemed it better to follow their example. In changing the generic name, a change also became necessary in the corresponding No. in the London Catalogue, third edition.

174. *Spergularia marina*, vol. i. p. 221. (Arenaria, 183.)

Intermingled with this plant on our coasts, occur speci-

mens so curiously intermediate between marina and rubra, as not to be referred to either without hesitation. Mr. Babington would seem to divide these intermediates again, into salina and media; referring the former to marina, the latter to rubra, as subordinate varieties. The "media" of the London Catalogue, third edition, either includes both of Mr. Babington's varieties, or corresponds with salina more especially. Subject to some doubts as to what is really intended by the name, Sp. media has been reported from provinces 1 2 3 * 5 6 7 8 * * * 12; and it is probably as frequent as Sp. marina in England, if not in Scotland also. Mr. Babington removes Arenaria rubra and marina to the order of Illecebraceæ or Paronychiaceæ, under the generic name of Lepigonum. Dr. Arnott does the same, but under the generic name of Spergularia. Babington's variety seems to be Arnott's typical S. marina, and *vice versâ*.

175. *Spergularia rubra*, vol. i. p. 220. (Arenaria, 182.)

Miss Boswell finds this in Orkney, as I learn from Mr. Syme; though it is possible that the plant of Orkney may be the "media" variety of marina; for which see the preceding species.

178. *Arenaria serpyllifolia*, vol. i. p. 217.

This also has been found in Orkney by Miss Boswell; thus confirming Lowe's list so far.

179. *Arenaria tenuifolia*, vol. i. p. 217.

Said to have been found in Cornwall (Ray; Jones); but the habitat will require verification. The county of Hants may be named in the south limit, on faith of a specimen from Dr. Bromfield; that of Dorset doubtfully so, on authority of Dr. Pulteney. The Rev. W. W. Newbould suggests that Salt's station "about Maltby", Yorkshire, is likely to be correct; and if it prove to be so, a

change must of course be made in the north limit and range of latitude for the species.

181*. *Arenaria uliginosa*, vol. i. p. 218.

Mr. Daniel Oliver writes me that, "It grows sparingly amongst the loose bits of stone and turf by a little rivulet in a high exposed moorish country. I think 'rupestral' is scarcely the term," writes Mr. Oliver, "though how to better it I hardly know. It grows near Juncus triglumis and Elyna caricina, which certainly are not rupestrals." It would seem from this explanation, that the term 'uliginal' might be nearer the mark. Is the "Sagina stricta, *Fr.*", discovered by Mr. D. Oliver, near Kilmoran, South Arran, Ireland (Bot. Gaz. ii. 305), the same with the Arenaria uliginosa or Sagina maritima?

184. *Stellaria nemorum*, vol. i. p. 222.

Province 1 is to be added in the area, as probable though not quite certain. The plant is recorded in Flora Devoniensis, on authority of the Rev. W. Annersley; but the record was overlooked before, through the species being omitted in the first part of that work, and inserted only in the second arrangement. It has been since also recorded from Cornwall by Mr. Pascoe, on the testimony of Mr. J. Ward, in Botanical Gazette, vol. ii. p. 38. If these localities shall prove correct, and though not anticipated they can hardly be pronounced improbable, the south limit of the species will require to be altered accordingly; the number of provinces will thus be raised to 13; and corresponding changes must be made in the latitude (50), temperature (50 or 51), and zones (inferagrarian). For the present, however, I prefer to wait a confirmation of the plant in the two counties mentioned.

187. *Stellaria glauca*, vol. i. p. 223.

Provinces 7, 9, 12, may be added to the area; that of North Wales certainly, on authority of Davis's Welsh

Botanology; that of Mersey somewhat doubtfully, founded on the explanations in the Flora of Liverpool; that of Lakes, on the testimony of Mr. Daniel Oliver, who believes that he saw the plant near Moorhouse Tarn in Cumberland, some years ago, without feeling now quite certain on the point. Mr. Pascoe reports it from Cornwall, on the authority of Mrs. Grylls. Assuming the accuracy of these reports, the species is now known in 13 provinces and about 36 counties.

190. *Stellaria cerastoides*, vol. i. p. 226.

The altitude of 900 yards, mentioned in the first volume, has been inadvertently assigned to the station of this plant on Ben Lawers, instead of to that on Ben Nevis. The error should be corrected, because the altitude of 900 yards under the snow rocks of Ben Nevis, and the altitude of 900 yards on Ben Lawers, have different zones of vegetation; that of the latter being much less arctic than that of the former.

191. *Cerastium aquaticum*, vol. i. p. 226.

Province 6 to be added in the area, on faith of Mr. Motley's list of plants found in Caermarthenshire. Entered in Mr. Pascoe's list, as a plant reported to grow in Cornwall, but not observed in the county by himself. In the Flora of Forfarshire, Mr. Gardiner intimates that he has not found it near Dundee, as recorded by George Don.

195. *Cerastium arvense*, vol. i. p. 230.

Province 9 to be added in the area, on authority of Mr. J. T. Syme, who observed the plant in Lancashire. The estimate of 30 counties is likely too low. The type of distribution may be as near to the English as to any other.

196. *Cerastium alpinum*, vol. i. p. 231.

The sign of uncertainty "?" looks as if it were applied to number 17 in the line of area. But that province

is certain, and the sign is only substituted for the omitted number '18.' Still undetermined whether C. alpinum or C. latifolium was the species seen by Dr. Neill in Orkney.

197, b. *Cerastium nigrescens*, vol. i. p. 233.

The mean temperature of 46 will be too high; that of 45—44 will probably be nearer truth, in accordance with explanations made on page 4 of the second volume.

200. *Linum perenne*, vol. i. p. 235.

Province 3 to be added in the true area, on authority of Mr. E. G. Varenne, who finds the species at Southend, Essex. Dr. Bromfield (Phytol. iii. 276) refers to Dr. Pulteney's list in the Hampshire Repository, as an authority for L. perenne in that county, but distrusts the record himself. It may be safer to exclude provinces [1] and [2] for the present. The county of Essex should be indicated in the south limit, instead of Suffolk, on the testimony of Mr. Varenne; and the provincial census will rise to 6.

203. *Radiola millegrana*, vol. i. p. 237.

Province 6 to be added in the area, on authority of Mr. Babington and other botanists. The provincial area thus becomes general.

208. *Althæa officinalis*, vol. i. p. 240.

The south limit may be extended to Cornwall, on the authorities quoted by Mr. Pascoe, in Bot. Gaz. ii. 39. Mr. Aiton enumerates it among the plants of North Lancaster, so that perhaps province 12 may be added to the true area.

210. *Lavatera arborea*, vol. i. p. 241.

The true distribution of this plant, present and native, is still very imperfectly determined. The counties of Cornwall, Devon, Somerset, Glamorgan, Pembroke, Anglesea, seem to be best authenticated. Those of Dorset,

Caernarvon, Man, Ayr, require confirmation. Hants, Sussex, Essex, Norfolk, Northumberland, Haddington, are either erroneous or much suspected to produce the plant only as an escape from cultivation. Mr. Borrer gathered this plant on the island called 'Inch Garvie,' in the Firth of Forth, in 1808. Professor Balfour mentioned its occurrence on rocks on the south of Ailsa Craig, opposite the coast of Ayr; but he omitted it from his list of species seen on Ailsa. Does this after omission intend that the Lavatera was not a native on Ailsa? Perhaps the safer course will be, to consider the plant native and certainly existent only in provinces 1, 6, 7; uncertainly so in 2, 12, 13, 14.

211. *Tilia parvifolia*, vol. i. p. 243.

Very little additional evidence has been adduced to bear upon the question of the nativity and distribution of Tilia parvifolia and the other species. The tendency, however, has been towards confirming the present as a native species, and rejecting the others; unless, indeed, T. europæa of English botanists is to be held only a large form or variety of T. parvifolia. Dr. Bromfield deems this truly indigenous in mainland Hants and the Isle of Wight; and the latter habitat may thus be cited in the south limit. Province of Mersey (9) may be added to the area of it as an uncertain native.

214. *Hypericum Androsæmum*, vol. i. p. 245.

Mr. Storey finds it in Northumberland, and Mr. George Wallich in Fife; but whether really native in either county, I do not know. For the present the province of the East Highlands (15) can be entered in the area only as a questionably indigenous habitat.

215. *Hypericum perforatum*, vol. i. p. 246.

No authority can yet be adduced for this species in the provinces of Lakes and West Highlands; the latter

erroneously printed "Lowlands," on page 248 of volume first. Range of mean annual temperature 52—45.

216. *Hypericum dubium*, vol. i. p. 247.

The north limit may be traced in Perthshire (Mr. H. M. Balfour!) and Argyleshire (near Dunoon; Mr. G. S. Gibson). With regard to the supposed distinctness between H. dubium and H. maculatum (Bab.—not Crantz?), it is now given up even by Mr. Babington, who first and almost alone supported that view. Thus united under one species, the specimens of H. dubium can usually be discriminated from those of H. perforatum, by the venation of their leaves, assisted by the characters of the calyx and styles; but there are instances in which the distinctions become very slight.

221. *Hypericum hirsutum*, vol. i. p. 251.

Province 17 to be added in the area, on authority of the Rev. George Wilson, as recorded in a foot-note on page 23 of the 'Collectanea for a Flora of Moray.'

222. *Hypericum montanum*, vol. i. p. 252.

The south limit may be carried to Cornwall, where three or four localities are known, according to Mr. Pascoe, in Bot. Gaz. ii. 39. Ascends to 200 yards, more or less, in North Wales.

223. *Hypericum elodes*, vol. i. p. 252.

Province 8 may be added in the area, on faith of specimens sent from Derbyshire to the Botanical Society of London by Mr. Joseph Whittaker.

225. *Acer campestre*, vol. i. p. 254.

Province 6 may be added to the area, on authority of Mr. Motley's list of plants found in Caermarthenshire; but this is the sole authority for South Wales as yet. Province (9) may also be added, enclosed as an indication of distrusted nativity.

226. *Acer Pseudo-platanus*, vol. i. p. 255.

Provinces (4) and (15) may be added in the introduced area, on authority of Flora Bedfordiensis, Flora of Forfarshire, &c.

227. *Erodium maritimum*, vol. i. p. 256.

Mr. W. W. Reeves reports that he found this species "very sparingly on a sandy bank about a mile from Farnham, Surrey" (Bot. Gaz. i. 327); but I fear to rely implicitly on this record, unless verified by some better known botanist, or the station described in terms sufficiently explicit for enabling another collector to find the spot. A "mile from Farnham" is a six-mile circuit around the town. North Lancaster may be added in the north limit, on authority of Mr. Aiton's list.

228. *Erodium cicutarium*, vol. i. p. 257.

Ascends to about 400 yards in North Wales, on faith of a record by Mr. Lees, in Phytologist iv. 119.

228*. *Erodium moschatum*, vol. i. p. 257.

Mr. Borrer writes very decidedly in confirmation of the real nativity of this species in Cornwall and Devon. (See Bot. Gaz. ii. 93.)

229. *Geranium phæum*, vol. i. p. 259.

Province (6) may be added in the area, on authority of Mr. Motley's list of Caermarthenshire plants. I fear there is very little reason for fancying this a native species. Like various other old garden plants that seed freely, this one is frequently seen semi-naturalised about hedges and borders of woods in the vicinity of cottages and country mansions; and hence it is supposed native by several botanists whose mental qualities better fit them for observing facts in detail, than for reasoning upon the connexions between facts. Nothing has hitherto been placed on record, sufficient to warrant the inclusion of G.

phæum among native British plants. Whether it is or is not one of that class, is a question that still remains to be determined; and meanwhile, in the absence of evidence to show that it is native, it must remain in the same category with G. striatum and G. nodosum.

Xd. *Geranium nodosum*, vol. i. p. 259.

The species mentioned in Phytologist as referred to in volume first, page 259, and in New Botanist's Guide, page 278, may have been G. macrorhizum. The fragment was very probably picked in a garden, though sent as a wild specimen.

230. *Geranium sylvaticum*, vol. i. p. 260.

Province 9 may be added in the area, on faith of a specimen given to me by Mr. J. G. Baker, as having been collected in Lancashire by Mr. Oldham.

231. *Geranium pratense*, vol. i. p. 260.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe. I fear that the Isle of Wight is an error; but it occurs in mainland Hants, though very locally, according to testimony cited in Phytol. iii. p. 274.

232. *Geranium pyrenaicum*, vol. i. p. 261.

Mr. Keys deems this "truly wild" by the Yealmpton road-side three or four miles from Plymouth; and Mr. French has collected specimens, by the road-side, on Combe Down, near Bath. Whether the former of these stations will warrant our extending the south limit into South Devon, may still admit of doubt. Dr. Bromfield could cite only the old and apparently unconfirmed authority of Dr. Pulteney, for the existence of this species in Hants. Altogether, I fear it must still be looked upon as very dubiously indigenous in England, and clearly not indigenous in Scotland.

234. *Geranium pusillum*, vol. i. p. 263.

Province 6 may be added in the area, on authority of Mr. Motley's list of Caermarthenshire plants. The south limit extends to Cornwall, on the testimony of Mr. J. Ward, quoted by Mr. Pascoe.

237. *Geranium columbinum*, vol. i. p. 265.

Perhaps the north limit may be extended to Forfarshire; two stations being mentioned for this species in Gardiner's Flora, "but in small quantity in both places."

238. *Geranium lucidum*, vol. i. p. 265.

Province 9 to be added in the area, on faith of a specimen from Mr. J. G. Baker, collected in Lancashire by Mr. J. Dugdale; also given as an addendum to the Flora of Liverpool, page 160. On authority of the Rev. C. A. Johns the south limit may be extended to Cornwall.

239 b. *Geranium purpureum*, vol. i. p. 266.

On page 267, read "ranging on the coast from Kent westward to Cornwall and northward to Merionethshire."

240. *Geranium sanguineum*, vol. i. p. 267.

Mr. J. G. Baker informs me that it probably attains to 1100 feet of altitude on the great cliff at Whitstoncliff, in Yorkshire.

242. *Impatiens Noli-me-tangere*, vol. i. p. 268.

Provinces (5) and (15) may be added to the area of this species as a naturalized plant; the former on information from Mr. Thomas Kirk, and the latter on authority of the Flora of Forfarshire.

244. *Oxalis corniculata*, vol. i. p. 271.

I fear this ought to be held only a naturalized species, and not sufficiently wild or frequent to be raised from the alien to the denizen category. Some of the stations formerly reported for it, are now known to belong to O. stricta. For instance, Mr. Borrer informed me that the

Sussex species is O. stricta, and that the specimens from Mrs. Smith, mentioned in English Botany, were from an old orchard at Cuckfield, in which he had seen O. stricta.

244.* *Oxalis stricta*, vol. i. p. 272.

Provinces (2, 3, 5, 9) may be added in the area of this species, as an introduced, and to some extent naturalized plant. That frequent fault of dabblers in botany, the fault of suppressing circumstances which go towards showing a species not native, and of exaggerating those of an opposite tendency, has been illustrated in reports about the localities of this plant. In the Phytologist, i. p. 1144, we are told by "Wm. Curnow," that O. stricta is found at "Larrigan, near Penzance." This is true, so far as it goes, but a very important condition is not told by the reporter. Mr. Borrer afterwards wrote thus; "I have seen it, conducted by Mr. Curnow, in the Larrigan station, where it was growing in strawberry-beds in an old orchard or garden." Mr. Pascoe intimates in Phytologist, iii. p. 104, that it has been known for upwards of eighty years as a weed of gardens in the vicinity of Penzance. In the Phytologist, iii. p. 70, Mr. Joseph Sidebotham wrote of this species, "In some gardens and potato-fields near Didsbury it is quite a troublesome weed, and my late friend E. J. Wilson found it equally common in the neighbourhood of Congleton." This sentence was penned in a sort of attack on the Compilers of the 'London Catalogue of British Plants,' on the subject of their naturalized and excluded species, by the pseudo-botanist mentioned, who perhaps little suspected the hazardous location he had hit upon. It so happened that my own botanical rambles and collectings commenced in and about Congleton, the gardens and fields of which were familiar to me during several years; and during those

years I never saw a specimen of Oxalis stricta there. If the plant is "equally common" at Congleton and Didsbury, I thus get a measure of its common-ness at the latter place also. Both this and O. corniculata, however, will rapidly become established weeds, if introduced to cultivated ground or wastes by road-sides. The counties of Cornwall, Devon, Sussex, Middlesex, Warwick, and probably others, may be said now to produce O. stricta as an established weed.

245. *Euonymus europæus*, vol. i. p. 272.

Province 9 may perhaps be added in the area, on faith of the Floras of Liverpool and Manchester; though in the former the Euonymus is given only as a dubious native, and the latter is a work of suspicious authority, that can be only relied upon for plants otherwise deemed likely to occur in its district.

Xd. *Staphylea pinnata*, vol. i. p. 273.

According to Faunula Grustensis this was found in Denbighshire (province 7) by Mr. R. Roberts; but if correct, doubtless planted there. Mr. Borrer has sought this shrub without success about Finsthwaite, near Newby, not Kensthwaite as copied on page 273 of volume first.

247. *Rhamnus Frangula*, vol. i. p. 274.

The south limit may be extended to Cornwall, on authority of Mr. F. P. Pascoe. Perhaps the estimate of 40 counties would not be too high, this shrub being already on record for about 30, and some others would seem very likely to produce it.

248. *Spartium scoparium*, vol. i. p. 274.

The south limit extends to Cornwall, according to Mr. Gibson and Mr. Pascoe.

250. *Ulex nanus*, vol. i. p. 277.

It is impossible at present to state the true distribution

of this species, taken apart from U. Gallii. Nor, perhaps, is it necessary to make the attempt, since Mr. Joseph Woods asserts (Phytologist iii. 1059) that intermediate states may be seen about Monmouth. In uniting the two alleged species, provinces 10, 11, 12 must be taken into the area; U. nanus or Gallii having been reported from each of them.

252. *Genista pilosa*, vol. i. p. 279.

Province 5 may be added in the true area, on authority of Mr. Borrer; by whom this plant has been gathered on a heath or common near Little Malvern. According to Mr. Aiton's list of plants in Cartmel and Furness, this species is "frequent on rocks in High Furness"; but I fear to add the province [12] to the area, except as one suspected to be erroneous.

253. *Genista anglica*, vol. i. p. 279.

Province 12 may be added in the area, on authority of Mr. Daniel Oliver. Mr. Joseph Woods remarks (Phytologist iii. 1058) that he does not see G. anglica "mentioned in the Botanist's Guide for Glamorgan." Why should it have been mentioned for that county, since it is not mentioned for any other? Like Ulex europæus or Vaccinium Myrtillus, found in most of the counties, and often in great abundance, it is wholly omitted from both Old and New Guides.

255. *Ononis antiquorum*, vol. i. p. 281. (O. spinosa.)

Provinces 7, 9, 15, to be added in the area. In North Wales I have seen the species myself. Mr. J. G. Baker has given me a specimen collected in Lancashire, by Mr. J. Dugdale; and it is also enumerated in Dickinson's Flora of Liverpool. Judging by description, the O. arvensis "with spines," of the Flora of Forfarshire, must intend this species; thus extending its northern limit to that county, and beyond latitude 56.

256. *Ononis reclinata*, vol. i. p. 282.

This is given as indigenous to the British Islands in the London Catalogue, but as an alien only in the Cybele. Though not native in Scotland, or any part of Britain proper, it is said to be so in the Channel Isles; and hence it is given as a native in the Catalogue mentioned.

259. *Medicago falcata*, vol. i. p. 283.

The county of Sussex to be erased; the species having been erroneously enumerated among the plants of that county. I fear that it should also be excluded from the county of Dorset; and that the second province can be given only as erroneously recorded; my sole authority left for that province, being Dr. Salter's Catalogue of Poole plants. Mr. Hort records it, without any special remark or station, among plants seen in the neighbourhood of Weston-super-mare in Somerset (Phytol. ii. 1047), which I hesitate to receive as sufficient evidence of the nativity of the species in the province of Peninsula, because other botanical visitors of Weston do not appear to have met with it there.

260. *Medicago lupulina*, vol. i. p. 284.

Mr. Syme observed it about Swanbister in Orkney, but supposed it likely introduced with grass-seeds; so that the province of North Isles (18) cannot yet be added to the truly native area of this usually very common plant.

261. *Medicago maculata*, vol. i. p. 285.

Provinces 6 and 9 to be added in the area; that of South Wales on authority of Mr. C. C. Babington, who observed this species in Pembrokeshire; that of Mersey on faith of Dickinson's Flora of Liverpool, but on the anonymous authority of "W. H."

262. *Medicago denticulata*, vol. i. p. 286.

Provinces (5) and (11) may be added in the area, but not as really indigenous habitats. Mr. Storey sent me a

specimen from Hebburn ballast hills, Durham; and Mr. Purchas says that it was found near Ross in Herefordshire, in 1849 (for the first time), in three spots; in two of them on rubbish heaps, and in the other in a field of Mangold Wurzell. Province (9) may also be added, on faith of Buxton's Botanical Guide; though the alleged habitat should be verified. The county of Devon may be substituted for that of Cornwall in the south limit; its existence in Cornwall having been either uncertain or accidental and temporary.

263. *Medicago minima*, vol. i. p. 286.

Mr. Withers informs me that it cannot now be found in the alleged locality near Bath. I have seen specimens from three counties only; those of Kent (Mr. Luxford), Suffolk (Mr. Babington), and Norfolk (Mr. Wardale). Province (9) or [9] may be added on faith of Buxton's Botanical Guide to the Plants found around Manchester.

264. *Melilotus officinalis*, vol. i. p. 287.

Provinces 7 and 9 may be added in the area; that of North Wales on authority of Welsh Botanology; that of Mersey on faith of a specimen from Mr. J. G. Baker, collected in Lancashire by Mr. J. Dugdale. Perhaps both these provinces are worse than doubtful as truly native habitats, but they may pass muster for the species viewed as a denizen only. Enumerated in the Flora of Forfarshire as a probably introduced species.

265. *Melilotus vulgaris*, vol. i. p. 288. (M. alba.)

Province (15) may be added in the area, on authority of Mr. Croall in the Flora of Forfarshire.

266. *Trigonella ornithopodioides*, vol. i. p. 290. (Trifol.)

Province 9 may be added in the area, on faith of a specimen from Mr. P. Bean. The county of Forfar still rests on the sole testimony of George Don; no verification of

the locality having been made, according to the Flora of that county.

268. *Trifolium subterraneum*, vol. i. p. 292.

Province 9 may be added in the area, on the two authorities quoted in Dickinson's Flora of Liverpool; but further confirmation would be desirable.

269. *Trifolium ochroleucum*, vol. i. p. 293.

The south limit should be traced in Essex and Herts (or Surrey). It was given in "Kent (or Sussex)" on authority of the Flora Tonbridgensis; but Mr. Borrer remarks "I suspect the insertion of this in the Flora Tonbridgensis was one of T. F. Forster's mistakes. I believe there is no authority for it in either Kent or Sussex." The county of Surrey rested only upon old authority, until Mr. George Lawson very recently (Phytol. iv. 461) reported this species as found by himself on Wandsworth Common in that county; but reporting also T. resupinatum and Scorpiurus subvillosus, so that perhaps he only intended to mention the present species as an accidental introduction to the locality. It is also enumerated in the Floras of Liverpool and Manchester, very probably through errors on the part of Mr. Thomas Sansom and Mr. Joseph Sidebotham.

270. *Trifolium Molinerii*, vol. i. p. 294.

According to the Rev. C. A. Johns (Phytol. ii. 907) this "is found at intervals along several miles of the coast between Cadgwith and Kynance, and is as undoubtedly wild as Statice Armeria, and in some spots quite as abundant."

273. *Trifolium maritimum*, vol. i. p. 296.

Province (10) instead of (11) is given in the area; although in the text which follows, the ballast hills of Tyne are expressly mentioned. My specimens are from Somerset (Mr. Thomas Clark), Dorset (Mr. Ray, B. S. L.), Essex (Mr. Varenne), and Monmouth (Mr. Purchas).

The counties of Cornwall, Kent, and Merioneth will require to be verified. In Suffolk and Norfolk, this species may have become extinct. In Sussex it has been found by Mr. Borrer. For Hants I know only the unreliable authority of the Rev. S. Palmer, though the county is not in itself an unlikely habitat.

275. *Trifolium arvense*, vol. i. p. 298.

The south limit extends to Cornwall, on authority of Mr. Pascoe and the Rev. C. A. Johns.

276. *Trifolium scabrum*, vol. i. p. 298.

Province 9 may be added in the area, on authority of Miss E. Potts, quoted in Dickinson's Flora of Liverpool.

277. *Trifolium striatum*, vol. i. p. 299.

Provinces 6 and 9 may be added in the area; that of South Wales on the authority of Mr. Purchas; that of Mersey on the authority of Mr. W. Wilson, quoted in Buxton's Botanical Guide.

277*. *Trifolium Bocconi*, vol. i. p. 300.

Mr. Borrer thus writes in 1849, "Mr. Johns has settled this as a native by discovering it near Llandewednach. I showed Mr. Babington the plant near Cadgwith. No one that has seen them can doubt that T. Molinerii and T. strictum are also natives of the Lizard district.

Xd. *Trifolium resupinatum*, vol. i. p. 301.

Province (3) may be added to those which have casually produced this alien species, on faith of a report by Mr. George Lawson that he found it on Wandsworth Common, Surrey, in 1851.

278. *Trifolium glomeratum*, vol. i. p. 301.

This has been observed in Somerset by the Rev. W. H. Coleman; and it is said by Mr. Motley to have occurred in Caermarthenshire, but to have been afterwards destroyed there.

278*. *Trifolium strictum*, vol. i. p. 302; vol. iii. p. 333.

This is stated to have been found in Anglesea, by Dr. Dickinson; particulars being recorded in the Botanical Gazette, vol. i. p. 28.

279. *Trifolium suffocatum*, vol. i. p. 302.

This is found in both counties, Norfolk and Suffolk, in the vicinity of Yarmouth, as I am informed by the Rev. W. W. Newbould.

283, b. *Lotus tenuis*, vol. i. p. 305.

Mrs. Dickson has sent me examples of this gathered on gravel thrown out of a stream in Kincardineshire.

285. *Lotus angustissimus*, vol. i. p. 307.

Province 2 may be added to the true area. Dr. Bromfield sent me a specimen from Stokesbay, Hants; and Mr. Borrer informs me that the plant found near Hastings, in Sussex, belongs to this species. These two counties may therefore be taken as the north or east limit. The estimate of provinces will be raised to 2, and that of counties be raised to 4. The type of distribution becomes so far more like the English, though still rather south-western than simply southern in England.

285, b. *Lotus hispidus*, vol. i. p. 307.

Province 2 may be added in the area, on faith of two stations near Poole in Dorset, reported by Mr. Joseph Woods, in Phytologist, iii. 262—3. The estimate of provinces will thus be raised to 2, and that of counties to 3.

286. *Astragalus glycyphyllus*, vol. i. p. 308.

The south limit may be extended into Cornwall, on authority of J. Carne, quoted by Mr. F. P. Pascoe.

287. *Astragalus hypoglottis*, vol. i. p. 308.

Found in Herefordshire by Mr. A. T. Willmott. And according to Mr. Peter Gray it has been reported to occur in Kirkcudbrightshire. If correct, this latter habitat will

add province 13 in the area. Mr. John Ball found it "by the river Garry, north of Blair Athol" in Perthshire, which may probably warrant a mean temperature as low as 45.

290. *Oxytropis campestris*, vol. i. p. 311. (Astragalus.)

Probably the midarctic zone would be more correctly indicated for this species.

291. *Ornithopus perpusillus*, vol. i. p. 311.

Province 6 may be added in the area, on authority of Mr. Babington, &c.

292. *Arthrolobium ebracteatum*, vol. i. p. 312.

According to Mr. Elihu Berry, in Phytologist, iii. p. 386, this southern plant has been found in Yorkshire "on the canal bank, by the Oakes-farm." Unless there has been some error as to the species, we may presume it an introduced plant there.

293. *Hippocrepis comosa*, vol. i. p. 312.

Mr. J. T. Syme has seen a specimen of this plant, gathered by Miss Boswell in the county of Kincardine, "apparently quite wild." Judging by the altitude attained in England, both Ayrshire and Kincardineshire would be quite within the climatal range of the species. Mr. J. G. Baker suggests that its range should be considered to extend to the arctic region, as it occurs at the top of Cronkley Fell, although not quite at the highest part of the hill. This altitude of 600 or 650 yards in the province of Humber may be deemed about the limit or line of junction of the agrarian and arctic regions, corresponding with 400 or 450 yards in the East Highland province, about which is found the upper limit of cultivation there. "Near Ayr, Scotland"; according to Brit. Flo. edit. 6.

294. *Onobrychis sativa*, vol. i. p. 313.

Provinces (9) and (15) may be added, if worth while;

but the species is enumerated in the Floras of Moray and Manchester, the authorities for those provinces, avowedly as an introduced plant only.

296. *Vicia sylvatica*, vol. i. p. 315.

The south limit is to be extended to Cornwall, on authority of Mr. J. Ward, quoted by Mr. Pascoe in Bot. Gaz. ii. 315. As Mr. Pascoe repeatedly quotes that gentleman's name in his list, for Cornish plants not seen by himself, we must presume that he considers Mr. Ward's testimony to be competent in a botanical sense; and with one or two exceptions (Stellaria nemorum, for example) the species thus witnessed are those that might have been expected to occur in Cornwall, on inference from their known distribution in other counties. Perhaps "Mr. J. Ward" is a botanist resident in the county, and enjoying more ample opportunity for local investigations, than falls to the lot of temporary visitors there. I have seen specimens of Vicia sepium, sent from Surrey to the Botanical Society of London, labelled by the name of V. sylvatica; probably a false inference suggested by the place of growth being in "a wood near Reigate."

302. *Vicia bithynica*, vol. i. p. 320.

The south limit extends to Cornwall, on authority of Mr. J. Carne, quoted by Mr. Pascoe as above mentioned. The county of Hants was erroneously reported for this species in the British Flora, as we are informed by Dr. Bromfield in Phytologist, iii. p. 343. The province of Tyne (11) is indicated in the line of area within enclosure, because the plant is recorded on the Sunderland ballast hills; but whether still existent or now extinct there, I am unable to say in this as in many other similar instances. The plants observed on ballast must often be uncertain and temporary.

304. *Vicia tetrasperma*, vol. i. p. 321.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe. I am still unprepared to cite any authority for the provinces of the Lakes and East Lowlands.

305. *Lathyrus Aphaca*, vol. i. p. 322.

Mr. Benjamin Carrington reports this species from the neighbourhood of Lincoln; so that perhaps province 8 might be correctly admitted into the true area, though I prefer still to wait for further confirmation.

306. *Lathyrus Nissolia*, vol. i. p. 323.

Provinces [12] and (15) may be added in the area; that of the Lakes on the report of Mr. E. W. R. Hughes, in Phytologist, ii. p. 905, requiring verification; that of the East Highlands, apparently not an indigenous habitat, on the report of Mr. George Lawson, in Bot. Gaz. ii. 276.

307. *Lathyrus hirsutus*, vol. i. p. 324.

Of this species I have seen no English specimen, and fear that it has been found wild only in one county; namely, that of Essex, in the province of Thames. A single example has been found in the Isle of Wight, "perhaps introduced accidentally", according to Dr. Bromfield's catalogue of Hants' plants in the Phytologist, iii. p. 281. Mr. Borrer intimates that the plant found between Bristol and Bath, was Vicia bithynica, which certainly does grow in North Somerset, and was not unlikely to be mistaken for a hairy-podded Lathyrus.

309. *Lathyrus palustris*, vol. i. p. 325.

Much uncertainty still attaches to the stations recorded for this species. Mr. Thomas Clark has kindly sent me a specimen in evidence of its occurrence in Somerset. Dr. Bromfield indirectly expressed doubts about the alleged locality near Southampton, in his list in the Phytologist, iii. 282. Afterwards, by letter dated August 24,

1850, he informed me of another Hampshire locality, but without saying whether he wrote on sight of a specimen, or only on report; the station being "in the low meadows near Stoke Common, near Bishopstoke, collected by Dr. Garnier, Dean of Winchester." In the British Flora, edition 6, "South Wales" is indicated for this species; but I know not on what testimony that province has been stated to produce the plant, and hence I cannot rely upon the record. The indications of habitats, as given in the British Flora, have gradually accumulated into a medley of errors, direct and indirect; which must be the case in every work that treats of localities, while the authors have neither leisure time for keeping up their own knowledge on the particular department, nor inclination to consult the works of others who do attempt to sift out and correct the many errors that get into print.

310. *Lathyrus sylvestris*, vol. i. p. 326.

Provinces 9, 15, 16 may probably all three be considered as belonging to the true area of this plant. One station is recorded in the Flora of Liverpool, "Sutton Bridge, Frodsham, — John Harrison, 1850." The existence of this species in Forfarshire is confirmed by Mr. Gardiner's Flora of the county. And Mr. J. T. Syme informs me that it is "certainly wild in the island of Mull, off the south coast, between Loch Spelve and Loch Buy, growing on nearly perpendicular rocks, with Sedum Rhodiola." Mr. Pascoe finds it in Cornwall. Under those circumstances, several alterations will require to be made in the formula of distribution. The south limit will be extended to Cornwall. The north limit will be traced to Forfarshire and the Isle of Mull. The estimate of provinces will rise to 15. The estimate of counties may be given at 50; the species having been recorded from 44 counties, and some others being still among the

probable. The range of latitude will be 50—57. And the locality of Mull should be considered slightly within the superagrarian zone.

311. *Lathyrus maritimus*, vol. i. p. 328.

Province 8 may perhaps be now safely regarded in the true area, although even yet rather uncertain. In a list of Lincolnshire plants, by Mr. (Reverend?) J. H. Thompson, obligingly obtained for my use by Mr. Thomas Westcombe, the following note occurs, "I have seen Lathyrus maritimus in an herbarium, which was gathered at Ingoldmills or near it." Range of mean annual temperature 51—45, in accordance with explanations given on page 4 of the second volume.

313. *Orobus niger*, vol. i. p. 329.

Mr. Carter confirms the suggestion on page 330, that O. tuberosus was mistaken for O. niger in Staffordshire.

314. *Prunus spinosa*, vol. i. p. 330.

Province 6 may be added in the area, on authority of Mr. C. C. Babington. P. insititia has been recorded from nearly all the provinces, excepting the North Isles; although held dubiously indigenous in the Highland provinces, as, for instance, by the Flora of Forfarshire. Mr. Gardiner remarks that he has never seen the fruit of P. spinosa ripen in this last named county.

315. *Prunus Padus*, vol. i. p. 331.

Rather dubious as a native in provinces 3 and 4, if not in 5 also. Ascends to Twll du, Caernarvonshire, and to Falcon Clints, Teesdale, stations which may bring it near or within the inferarctic zone.

316. *Prunus Cerasus*, vol. i. p. 332.

Province 6 to be added in the area, on authority of Mr. C. C. Babington, who observed this shrub in Pembrokeshire. Perhaps also province 4, on authority of the Flora Bedfordiensis. In addition, the county of Essex (Mr.

Varenne) may be added to those before enumerated; and perhaps also mainland Hants, although Dr. Bromfield only mentions the Isle of Wight for it distinctly in his Catalogue, in Phytologist, iii. 284.

316*. *Prunus avium*, vol. i. p. 333.

Province 6 to be added in the area, on authority of Mr. Motley's list of Caermarthenshire plants.

318. *Spiræa Filipendula*, vol. i. p. 335.

The occurrence of this plant in Westmoreland is sufficiently attested by the Rev. George Pinder, &c. But its existence as a truly wild plant in Cumberland, or in any more northern county on the western side of Britain, is still left doubtful. It is confirmed as a Forfarshire plant in Gardiner's Flora of the county. I am still unprepared to cite any authority for it in the province of South Wales.

321. *Geum urbanum*, vol. i. p. 337.

Province 6 to be added in the area, on authority of Mr. Babington's Pembrokeshire list.

321, b. *Geum intermedium*, vol. i. p. 337.

Mr. Babington describes this as a distinct species, which is a ready and convenient solution of the difficulty suggested on page 338, and possibly may be a correct one. It has been found as far south as Hampshire, by the Rev. W. W. Spicer; but agrees with G. rivale in being more frequent in the northern counties of England.

322. *Geum rivale*, vol. i. p. 338.

The county of Dorset may be named in the south limit, although resting on old authority; and that of Ross may be named in the north limit, intermediate between Orkney and West Inverness.

324. *Sibbaldia procumbens*, vol. i. p. 339.

Province 14 may be added to the area, on authority of Mr. G. S. Blackie, who reports this plant as having been

found by himself at Manor-head, Peebleshire. Perhaps the county estimate may be raised to 15, the species being now known in 13 counties, while those of Kincardine, Caithness, and Outer Hebrides, any of them seem likely enough to produce it, though it still remains unreported from them. The provinces will be raised to 5 by Mr. Blackie's addition of the East Lowlands.

325. *Potentilla fruticosa*, vol. i. p. 340.

The estimate of counties may be raised to 4, as Mr. Aiton says that this shrub has been found "near Ulpha," by Cartmell.

327. *Potentilla anserina*, vol. i. p. 342.

This species should perhaps rather be designated "inundatal" than "glareal;" but its situations of growth are very various in respect to humidity, including both dry and damp places.

329. *Potentilla verna*, vol. i. p. 343.

Does this truly occur in Devon? If not, the county of Somerset should be named in the south limit.

332. *Potentilla Tormentilla*, vol. i. p. 345.

To this species Mr. Babington refers the Sussex plant reported by Mr. Mitten, in the London Journal of Botany, October, 1848, under name of P. mixta (Nolte); and adds that P. mixta is a hybrid between this species and P. reptans. I suppose it to be one of the doubtful or intermediate forms usually assigned to "Tormentilla reptans;" and most of which apparently belong to P. Tormentilla, by the character of "wrinkled carpels;" though some of my specimens, which are nearest to P. reptans in general habit, are unfortunately in the early flowering state, and without fruit. Something has been recorded under one or other of the synonyms, "Potentilla procumbens" and "Tormentilla reptans," from nearly all the provinces, southward to Devon, northward to Shetland.

333. *Potentilla Fragariastrum*, vol. i. p. 346.

Miss Boswell enumerates this among plants observed in Orkney. Although that cannot be pronounced a very improbable habitat, it is somewhat unexpected because the species had not previously been recorded by any botanist, as seen northward of Ross-shire. For the present, therefore, it would seem better to wait for confirmation of the species in Orkney, as a truly native plant there.

Xd. *Potentilla tridentata*, vol. i. p. 348.

Mr. Babington still describes this species in the character of an undisputed native, in the latest edition of his Manual, notwithstanding the geographical improbability of its occurrence here, and the fact that no other botanist than the much-doubted George Don ever professed to have found it in Scotland. On this account, it seems advisable to give currency to an item of information, conveyed to me by Mr. George Lawson, in a letter dated October 6, 1848; and which strongly tends to show that George Don may have had the P. tridentata in cultivation in his garden, and may have inadvertently sent garden specimens to Smith, under an idea that he had brought Scottish plants of it to his garden, or had seen the same thing growing on the hills of Forfarshire. "Regarding the rare Potentilla tridentata," writes Mr. Lawson, "perhaps it will be interesting for you to be informed that Don received seeds of that plant from Lyon, the American traveller, on Lyon's return from Paris and London to this place, with the residue of his foreign seeds. A year or two after that circumstance Potentilla tridentata was published as a native of Britain, on the authority of Don. For these facts I am indebted to Mr. George Palmer of this place [Dundee], a humble but zealous naturalist on whom I can place confidence. I allow you to trace the

connexion of these facts, and you may make any use of them you like." Having mentioned this circumstance to Mr. George Don, the son, he denied the accuracy of the times or dates; but the denial did not appear to me to render impossible the suggested fact, that Don's or Smith's specimen, mentioned on page 348 of the first volume, had sprung from American instead of Scottish seeds. Sub judice, &c.

335. *Fragaria vesca*, vol. i. p. 349.

Certainly found in South Wales, as by Miss Atwood in Cardiganshire, and by Mr. Babington in Pembrokeshire. Said to grow as high as "Craig Maid, Glen Dole," in the Flora of Forfarshire, which may be in the midarctic zone, but I do not know which is the rock or hill so designated.

336. *Fragaria elatior*, vol. i. p. 349.

Province (15) may be added to the area of this very probably introduced species. Some stations are mentioned in the Flora of Forfarshire, followed by the remark that "into all these stations the plant *may* have been introduced, but is now at least thoroughly naturalized." I am disposed to believe that some of the localities reported for this species, belong rather to garden varieties or hybrids not properly referred to F. elatior, but perhaps derived from F. grandiflora, or from this latter and F. virginiana. In reference to the alleged Teesdale locality Mr. Baker writes, "I should very much doubt the occurrence of this species in Teesdale, as I never heard of it from any other source than the Yorkshire Flora."

339. *Rubus cæsius*, vol. i. p. 352.

Provinces 6 and 13 may be added in the area; that of South Wales, on authority of Mr. Motley; that of West Lowlands on authority of Mr. Peter Gray. As set forth

in the first volume, however, the distribution is probably that of R. cæsius more or less mingled with other forms now separated; and doubtless many botanists will prefer the more exact, though less full, sketch by Mr. Babington, in this current volume, page 346.

346. *Rubus Idæus*, vol. i. p. 354.

The south limit is extended into Cornwall, on authority of Mr. Pascoe. I presume that my idea of R. Idæus includes also the R. Leesii of Babington, which is unknown to me. The production of flowers and fruit at the tops of the current year's suckers, is rather frequent among garden raspberries, but is quite inconstant from year to year on the same root. The prickles, too, are very variable in the garden raspberries; and though I have never actually ascertained the fact by exact experiment, I entertain no doubt that the prickles "setaceous from a bulbous base," supposed to be a diagnosis for R. Leesii, might be produced from fruits of R. Idæus. An individual botanist who, like myself, takes much and active interest in practical gardening, will often reach conclusions about the extent of species-variation, very different from the inferences obtained by botanists of the herbarium, whose means of judging are restricted to the outside characters of shape and proportion, unaided by observations on the physiological facts of growth and descent, as varied by age, season, soil, humidity, &c.

348, 349. *Rosa tomentosa* (Smith, Koch), vol. i. p. 355. (R. villosa, &c.).

The general sketch of distribution for a species, or aggregate species, under this name, may be understood to take in the various forms which British botanists label under the names of mollis, villosa, tomentosa, scabriuscula, gracilis, Sabini, Doniana; perhaps, also of Wilsoni and

involuta; an addition which would make no difference in the formula of distribution. The varying manner in which these several names are applied, would quite prevent the actual distribution of any one of the supposed species being correctly given by itself. Although rather disposed to believe that the name of R. "tomentosa" or R. "villosa," thus comprehensively taken, is applied to more than a single species, I confess to not yet being able satisfactorily to trace the limits between the species if more than one, and I cannot suppose there to be six or eight real species.

350. *Rosa rubiginosa*, vol. i. p. 356.

The south limit may be extended to Cornwall, on the authority of the Rev. C. A. Johns, quoted in Botanical Gazette, vol. ii. p. 39; where, however, only the very suspicious station of "Mount Edgecumbe" is given,—apparently intending the ornamental grounds about a nobleman's dwelling. Authorities may also be quoted for provinces 7 and 12; that of North Wales on authority of Welsh Botanology; that of the Lakes on faith of Mr. Aiton's list. By name, R. rubiginosa is thus on record for all the provinces, except 9, 17, 18; though probably not truly wild in all. Of the other Roses, included with R. rubiginosa in volume first, though not thereby extending the area of the latter, the one most frequently reported by botanists, next to R. rubiginosa itself, is the R. micrantha, reported from all the first eight provinces, and that of Humber. Rosa inodora, probably distinct from R. rubiginosa, is on record from provinces 1 2 3 * 5 * * 8 * 10 11 * * 14 15 16.

352. *Rosa systyla*, ("Bast."), vol. i. p. 358. (R. stylosa).

Although there does appear to be a true species to correspond with this name, found in many of the counties of

the southern provinces of England, I fear that it is represented in several instances, by examples of R. arvensis or R. canina, and perhaps R. tomentosa. For the present, the south limit may be traced in Somerset, Sussex, Kent; the north limit in Caermarthen, Worcester, Herts, Essex; the intermediate counties of Surrey, Berks, Hereford, Monmouth, Glamorgan, having also been reported, and being probably correct. Those of Denbigh (Mr. Rowland), York (Mr. Spruce), Moray (Coll.), and Inverness (Brit. Flo.), requiring confirmation. Reduced to provinces, Nos. 1 2 3 * 5 6 may thus be admitted; but Nos. 7 to 16 must be excluded, as still uncertain or quite unrecorded.

353. *Rosa arvensis*, vol. i. p. 358.

Province 12 to be added in the area, on authority of the Rev. George Pinder, who found this shrub in Firbank road, from Sedbergh, "just within the Lake province" or county of Westmoreland. Mr. Syme observed it in Kincardineshire, but doubtfully native there. George Don enumerated it as a species of Forfarshire; but it is not confirmed for that county by Gardiner's Flora.

Xd. *Rosa cinnamomea*, vol. i. p. 359.

Found near Clonmel, Ireland, by Mr. T. Anderson and Mr. J. Sibbald, as recorded in Bot. Gaz. iii. 11.

354. *Sanguisorba officinalis*, vol. i. p. 360.

Naturalized in the Den of Mains, East Highlands, according to the Flora of Forfarshire.

355. *Poterium Sanguisorba*, vol. i. p. 361.

Provinces 9, 12, 14 may be added in the area; that of Mersey, on authority of Mr. Maughan, quoted in Dickinson's Flora of Liverpool; that of the Lakes, on authority of Mr. Aiton's list, and of Nicholson's Annals of Kendal;

that of East Lowlands, on faith of a specimen from Mr. H. M. Balfour, and some other reports of localities.

356. *Alchemilla vulgaris*, vol. i. p. 361.

The south limit may be extended into Cornwall and Sussex. Mr. Pascoe reports "three localities" in Cornwall, one of them "near a garden." Mr. Borrer finds it in Sussex.

357. *Alchemilla alpina*, vol. i. p. 362.

On Cautley Crags, near Sedbergh, Yorkshire, "as low as 100 feet," according to the Rev. George Pinder. But whether this intends only 100 feet above the sea, or 100 feet above Sedbergh, I am not prepared to say. If the former, this species may likely grow in a mean temperature of 46, if not 47. It thrives tolerably well when planted in my garden in Surrey; but unlike the A. conjuncta, young plants seldom or never spring spontaneously from seed there; nor do I think that the seed is usually perfected.

Xd. *Alchemilla conjuncta*, vol. i. p. 363.

Another claim is now published for this as a wild British plant; namely, "Glen Sannox, Arran, Scotland, *Dr. N. Tyacke*!" (Bab. Man. edit. 3). I must decline to receive this as a certain locality for A. conjuncta, any more than for A. planiculmis, unless confirmed by a second botanist. A living example of A. conjuncta was exhibited not long ago among a collection of "British" plants, at one of the Flower Shows in the Botanic Garden, Regent's Park, labelled as Alchemilla alpina from the mountains of Wales. I supposed this to be only the mistake or trick of a gardener who had not learned to distinguish the two species. Although Britain is a habitat geographically probable I do not think we can yet regard A. conjuncta as having been truly found outside gardens and unplanted.

359. *Mespilus germanica*, vol. i. p. 364.

Mr. Pascoe marks this as a species that has been reported to occur in Cornwall; and by the Rev. W. H. Coleman it is marked as having been seen by himself, indigenous within five miles of Dunster, Somerset. It may perhaps be held indigenous or denizen in provinces 1, 2, 3; introduced or uncertain in 5 and 9. My individual opinion, however, would incline to place it in the category of alien species in Britain.

360. *Cratægus Oxyacantha*, vol. i. p. 364.

Province (18) should be enclosed; for, whatever view may be maintained about the other provinces, there would seem to be no sufficient ground for supposing this species a true native in the North Isles. By a misprint or mis-transcription in volume first, province 18 was not enclosed in the line of area; although the substitution of all the Nos. in detail, in place of the word "general," in connexion with the remarks of the text, would show that it was intended not to reckon the North Isles in the true area. The variety "eriocarpa" may be usually recognized by its less robust growth and more deeply cut leaves; but I cannot trace any constant difference sufficient for specific diagnosis.

361. *Cotoneaster vulgaris*, vol. i. p. 365.

Mr. Edwin Lees says that the altitude of its station "may be between 400 and 500 feet high." Thus, 150 yards may be indicated both for the upper and the lower limit, at the one solitary station, yet clearly ascertained for this shrub.

362. *Pyrus communis*, vol. i. p. 366.

Provinces (9, 12) may be added in the enclosed area; that of the Mersey, on authority of the Flora of Liverpool, in which the P. communis is enumerated as an

introduced species only; that of the Lakes, on authority of Mr. Aiton's list, with the station of "hedges near Ulverston." The much less frequency of the Pear, as compared with the Crab, and the less confident tone usually adopted by local writers in mentioning its stations and claims to be held indigenous, both rather make against P. communis as a native. Moreover, the Pear blossom is more subject to injury from spring frosts, and the fruit requires longer time or a higher temperature to ripen, than is the case with the blossoms and fruit of the Crab or Apple. Still, the Pear has been apparently wild in England from a remote date. And Mr. Varenne remarks that it "surely must be as wild as the Crab, though but seldom met with. Gerarde, p. 1458, who gives us no encouragement to eat wild pears." I cannot divest myself of a strong suspicion of some error in the following record of Pyrus communis, taken from the Flora of Forfarshire: "Rocks of Craig Maid, Glen Dole, Clova, undoubtedly wild, August, 1842, — out of flower." This would go to prove P. communis a species of our arctic or alpine flora. On the other hand, the Author of the Flora of Forfarshire deems P. Malus "probably introduced."

364. *Pyrus torminalis*, vol. i. p. 367.

Province 9 may be added in the area, on authority of the Flora of Liverpool. Also (12) on authority of Mr. Aiton's list of plants in Cartmell and Furness; who reports it in "Plumpton woods,"—planted woods I suppose. It is often seen solitary, or by very few examples together, but still looking as if native, not planted.

365. *Pyrus Aria*, vol. i. p. 367.

Province (9) may be added in the naturalized area, on authority of the Flora of Liverpool; the species occurring "in woods and hedges in Wirral [Cheshire] and

Lancashire, but evidently planted there." For the distribution of the subordinate species, reference may be made to pages 347 and 348 of this volume.

368. *Epilobium hirsutum*, vol. i. p. 370.

Province 12 to be added in the area, on authority of Nicholson's Annals of Kendal. Also, reported to have been found in Moray, but whether truly wild remains very doubtful. Perhaps, it would be more correct to refer this species to the English type of distribution, if wholly absent from the northern half of Scotland. It is, however, marked with the highest sign of frequency for the Edinburgh circuit, whether rightly or wrongly so; and it is stated to occur "in various places, though not common," in Forfarshire.

371. *Epilobium roseum*, vol. i. p. 372.

The provincial vacancies still remain as indicated in the first volume. It is known in 15 counties of the first six provinces of England; in only three counties of the remaining six English provinces; namely, Notts, Derby, York, from each of which I have seen a specimen. I have seen no example from Scotland, though it is reported from Moray (G. Don, in Coll.), Forfar (Miss Bousie, Flora F.), and Fife (Dr. Dewar, B. S. Ed. Rep.). Perhaps an estimate of 10 provinces and 25 counties may be warranted. The type of distribution is English rather than British, on existing knowledge. And the north limit should be traced only to Yorkshire, within latitude 55, until we obtain more satisfactory evidence of the existence of this species in Scotland or the most northerly counties of England. Neither can the midagrarian zone be deemed certainly exceeded.

372. *Epilobium palustre*, vol. i. p. 372.

The Rev. W. W. Newbould asks, "Is Babington's plant general? Plants of E. virgatum when diseased some-

times have the nodding buds of E. palustre, and resemble it at first sight." This is a question not easily answered at the present time; because we have now to carve out E. virgatum and E. Lamyi, partly perhaps from the examples hitherto referred to E. palustre, but chiefly (as I think) from those formerly considered E. tetragonum. As in every similar instance of dissevered species, it becomes needful to re-examine and verify the old habitats, so as to assign them correctly to one or other; because it must otherwise remain uncertain to which of the dissevered species any given locality belongs, if previously published only under the joint name used as common to both, while reputed a single species.

374, b. *Epilobium alsinifolium*, vol. i. p. 374.

There is a true species under this name, distinct from E. alpinum by its habit of growth; but I fear that broad-leaved and otherwise luxuriant states of the latter have been often misnamed E. alsinifolium; and hence the difficulty and uncertainty which has been felt in distinguishing the two species. So late as the sixth edition of the British Flora (1850) the following passage is still printed, by way of argument to show that the two may be distinct;—"in Wales, however, where E. *alsinifolium* is found, E. *alpinum* is never seen." Yet so long ago as the date of the New Botanist's Guide (1835), the locality of Snowdon, North Wales, was published for E. alpinum and E. alsinifolium, both, on the testimony of Mr. C. C. Babington. On faith of that record the south limit of E. alpinum was indicated in Caernarvonshire, in the first volume of the present work. True, Mr. Babington was a botanist of comparatively small experience in or before 1835; but as he allows that record still to remain unchallenged by himself, it may be presumed that he still knows

or believes that E. alpinum was found by himself on Snowdon. Have the Authors of the British Flora any reason to adduce against the accuracy of the alleged station, that they thus ignore or deny it?

378. *Circæa alpina*, vol. i. p. 376.

Province 1 is to be added in the area, on authority of Mr. F. J. A. Hort, who reports this species as found on the limestone débris of Cheddar Cliffs. Dr. W. B. Clark records C. alpina and Lutetiana both common in Freston woods, near Ipswich; but in support of this improbable habitat for the former, it will be needful to have higher botanical testimony before the province of Ouse [4] can be entered in the true area of C. alpina. So frequent, indeed, is the mistake of labelling or reporting the cordate-leaved states of C. Lutetiana as C. alpina, that half of the provinces enumerated in the area may be deemed to require verification. From personal observation I can testify only to provinces 12, 15, 16. Nor have I seen any specimen of true C. alpina from any of the other provinces on record for it. The C. intermedia has been reported from provinces 8, 10, 14, 15, 16. I suspect that more frequently a form of C. Lutetiana, than one of C. alpina, is named C. intermedia.

379. *Hippuris vulgaris*, vol. i. p. 377.

The south limit may be extended to Cornwall, on the report of the Rev. Mr. Rogers, as given in Bot. Gaz. ii. 39. The province of North Wales was erroneously omitted in the area, and stated not to produce this plant, which is enumerated in Welsh Botanology, however, as occurring in Anglesea. Range of temperature 52—45.

380. *Myriophyllum verticillatum*, vol. i. p. 377.

Mr. Pascoe has seen a dried specimen of this species, which was said to have been gathered in Cornwall. Two

other provinces, not numbered in the area, have been reported for the species; but both of them [6 and 15] on too slender evidence for admission; the M. alterniflorum very probably being the species intended.

382. *Myriophyllum alterniflorum*, vol. i. p. 379.

This has been ascertained in all the provinces, with the exception of the North Highlands, 17, where it may still be expected to be found if looked for. Its present known range northward in Britain extends only to the Hebrides and Moray.

384. *Callitriche platycarpa*, vol. i. p. 380.

The provincial area of this, another recently dissevered species, has been gradually filled up; the provinces of the Lakes and North Highlands being the only vacancies now remaining, and in these two, 12 and 17, it will very probably be found. The south limit may be traced in Cornwall, Isle of Wight, Sussex (or probably Kent); and the north limit in Shetland, Hebrides, (probably Orkney). The range of latitude will thus extend between 50—61.

385. *Callitriche pedunculata*, vol. i. p. 380.

The provincial area for this also has been now nearly filled up; the provinces of Ouse and Lakes, 4 and 12, remaining the only vacancies in my notes. Not improbably the "C. autumnalis" of the Shetland Flora will be found to belong to this species, which at present cannot be stated to exceed latitude 59.

386. *Callitriche autumnalis*, vol. i. p. 381.

Mr. J. T. Syme informs me that he has seen an example of true C. autumnalis, brought from Orkney by Mr. T. Anderson. On faith of this specimen, Orkney may be named as the north limit (with Shetland, relying upon Edmondston's Flora); and the province of North Isles, 18, will be added in the true area, instead of remaining

among the excluded. The range of latitude may also now be entered as 53—60. But no estimate of provinces or counties can yet be given, which would be much better than guess-work. Perhaps provinces 10, and counties 25, might be not far from truth in regard to numbers. In the sixth edition of the British Flora, the habitat of "Near London" is still repeated, like a hundred others that are far more likely to be inaccurate than true, and thus quite as likely to mislead students as to give them any useful information.

387. *Ceratophyllum demersum*, vol. i. p. 382.

Provinces 6 and 9 may be added in the area; the former on authority of Mr. Motley's list of Caermarthenshire plants; the latter on authority of "W. S." in the Flora of Liverpool. Probably province 10 should also be added, as Mr. J. G. Baker expresses an opinion that the so-called C. submersum of Baines's Yorkshire Flora, from the Foss by York, belongs to the present species; though the fruit not having been seen by Mr. Baker, he cannot say certainly.

388. *Ceratophyllum submersum*, vol. i. p. 382.

This has been reported from provinces 1 and 5; from that of Peninsula, by Mr. Hort, who found the plant at Woodspring, Somerset; from that of Severn, or county of Worcester, on the testimony of Mr. Roby. The province of Humber, or county of York, may be an error; for which see the preceding species. Mr. Pascoe records this species from Cornwall, on authority of Miss Warren, but failed to find it himself in the station reported to him. Mr. Thomas Moore finds it in Middlesex. Thus 7 provinces and 12 counties are reported, but some of them on very doubtful authority.

389. *Lythrum hyssopifolium*, vol. i. p. 383.

Three provinces [1 2 9] have been added to the area,

but on insufficient testimony for full reliance botanically. The 'Penzance Guide' is quoted by Mr. Pascoe, as his only authority for Cornwall, in the province of Peninsula. Dr. Bromfield had only the oral report or recollection of a lady-botanist, for its occurrence in the Isle of Wight, and no station to record in mainland Hants. Mr. R. W. Macall reports in Phytologist, ii. 751, that he found a few specimens at Rusholme, near Manchester, in 1846; but it is not acknowledged as a plant of that neighbourhood by Buxton's Botanical Guide. The Rev. W. H. Coleman favoured me with a specimen gathered at Colney Heath, Herts, in 1846. On the whole, perhaps, provinces 3, 4, 8 may be deemed certain, but provinces 1, 2, 5, 6, 9, 10, all uncertain, and hardly admissible without further confirmation.

391. *Peplis Portula*, vol. i. p. 384.

Nicholson's Annals of Kendal may be cited as an authority for the existence of this plant within the Lake province.

397. *Herniaria glabra*, vol. i. p. 388.

Since the first volume was printed, I have obtained a specimen from Norfolk, sent to the Botanical Society of London. Provinces 1 and 4 are certain; provinces 3 and 8 are uncertain, though not improbable; provinces 2 and 14 must be excluded until verified.

398. *Polycarpon tetraphyllum*, vol. i. p. 389.

A Devonshire specimen is in my herbarium, received from Dr. Bromfield; but all the other counties may be said to require confirmation. It may be better on present knowledge to hold the plant limited to two counties, Devon and Dorset, in two provinces, Peninsula and Channel; the latter of the two requiring modern verification.

399. *Scleranthus annuus*, vol. i. p. 389.

Province 6 may now be added; Miss Atwood finding

the plant in Cardigan, and Mr. Motley enumerating it in his Caermarthenshire list.

400. *Scleranthus perennis*, vol. i. p. 390.

According to Mr. Purchas and Mr. Westcombe this species has been found on Stanner Rocks, on the borders of Radnor, in South Wales; an unexpected habitat, from which I should prefer to see a specimen, before positively adding the sixth province to the area. (See Lychnis Viscaria, page 392, for particulars). In Forfarshire, according to Mr. David Don; but this alleged habitat has not been verified by Mr. Gardiner, and is too far away from its English area, to be admitted without better (that is, more cautious and exact) testimony than the often very hasty decisions on nomenclature by Mr. David Don; who was probably quite a young botanist when he supposed that he had found S. perennis in Forfarshire.

403. *Ribes nigrum*, vol. i. p. 392.

Provinces (6) and (9) may be added to the area for this species, but only as a naturalized plant. Some observations on the reported localities in Essex, by Mr. Varenne, may be seen in the Phytologist, iv. 91; the legitimate inference from which would seem to be, that the species is only adventitious and uncertain there. The Rev. W. W. Newbould thinks it may perhaps be indigenous in Holme Fen. On the whole, it must remain for the present much suspected as a native of Britain. If native in any part of our island it is probably very local and scarce in that character.

404. *Ribes rubrum*, vol. i. p. 393.

Province 6 may be added in the area, on authority of Mr. Motley's Caermarthenshire list. On the authority of Mr. Pascoe's list the south limit may be extended to Cornwall. I still doubt this species being native in the first five or eight provinces of England.

406. *Ribes grossularia,* vol. i. p. 394.

Province 6 may be added in the area, on authority of Mr. Motley's Caermarthenshire list. I fear that the gooseberry cannot correctly be held a true native of Britain. In the Phytologist, iii. 77, Dr. Bromfield enters at some length into a sort of special pleading in support of the aboriginal nativity of the gooseberry in Britain. In this attempt he is, as usual, more discursive in his arguments, than forcible in his reasoning. This shrub is very generally cultivated in our gardens. It produces fruit there abundantly. It is largely devoured by birds, especially by such as resort much to bushy places. Its seeds vegetate numerously in gardens and shrubberies, evidently disseminated by birds in many cases. Here we find sufficing causes to account for its occasional appearance also in hedge-rows and coverts distant from gardens. In such situations it is usually seen in small numbers only, often almost solitary. Moreover, it is not one of those species that might be much expected to occur indigenous in Britain; founding our expectations thereof upon its natural distribution in Europe. There is some difficulty in distinguishing between its native and artificial distribution; but I am inclined by the records to pronounce it an eastern and alpine, rather than a western and arctic species. And this supposition is certainly countenanced by its physiological character in relation to our climate. It bears with impunity the severest cold of any English winter; but is frequently injured in spring, through rapidly unfolding its leaves and blossoms with the first fitful return of genial weather. It thus seems adapted to a climate or country where the winter is continuously cold, and where the spring advances uniformly, without that changeableness of temperature so characteristic of our own climate. In short, it seems to suit a continental

rather than an insular climate, an eastern rather than a western.

407. *Tillæa muscosa*, vol. i. p. 395.

Province 2 may be added to the true area, on authority of Mr. Borrer and Dr. Bromfield; the latter of whom favoured me with a specimen from Hants; Mr. Borrer and other botanists reporting the plant as wild also in Dorset. Those two counties may consequently be indicated for the south limit. The provincial and comital estimates must be doubled. The range of latitude will become 50—53, and that of temperature 51—48.

409. *Sedum Telephium*, vol. i. p. 396.

From this species Mr. Babington separates the S. purpureum (Tausch). I have not particularly examined into the alleged distinctions derived from the shape or insertion of the upper leaves, but it is one of those uncertain characters that can be proved of small or no value in numerous other plants, of which the leaves vary in a similar manner with soil and season.

410. *Sedum villosum*, vol. i. p. 397.

Enumerated in the Flora of Liverpool; but it has not been seen by the Author of the Flora, or by the numerous other competent botanists, who have visited the pretended station at Bootle; nor can the name of Mr. James Roscoe be deemed at all reliable botanical authority under the circumstances. Still, the province of Mersey, in its moory and inland portion, seems far from unlikely to produce this species. Descends to the sea level in the East Highlands, according to the indications of localities in the Flora of Forfarshire.

413. *Sedum album*, vol. i. p. 399.

The Sedum of Malvern rocks and of walls elsewhere, recorded under name of S. album, is the S. teretifolium of Haworth, according to Mr. Borrer in Bot. Gaz. ii. 94. S.

turgidum is perhaps the commoner form in England, and from gardens only.

414. *Sedum acre*, vol. i. p. 400.

Mr. J. G. Baker mentions the occurrence of this species at 350 yards of altitude in Yorkshire; and it may perhaps be found still higher.

415. *Sedum sexangulare*, vol. i. p. 401.

Provinces [6, 8] may be added in the alleged area of this species; but they are too probably erroneous. (Compare Bot. Gaz. ii. 94 with Phytologist, iii. 1060).

416. *Sedum reflexum*, vol. i. p. 401.

Mr. Pascoe finds this in Cornwall, as a suspected and perhaps only as an introduced plant.

417. *Sempervivum tectorum*, vol. i. p. 403.

Provinces (6, 12) may be added in the area, if deemed worth while to complete the series of Nos. for a domestic plant.

422. *Saxifraga stellaris*, vol. i. p. 406.

"By the road-side near Machynlleth, I should think not higher than about 300 feet" (Mr. J. E. Bowman). Supposing this estimated altitude to be correct, the mean temperature may rise to 47; and perhaps the station may be within Montgomeryshire, a more southern county than Merionethshire.

423. *Saxifraga nivalis*, vol. i. p. 408.

The station of "High Cup Scar" is in Westmoreland, as I am informed by Mr. J. G. Baker.

424. *Saxifraga Hirculus*, vol. i. p. 409.

Province 15 may now be added to the ascertained area; Mr. Syme informing me that he has seen specimens from Clackmannan and Kincardine. A station, "upwards of twenty miles from the town of Aberdeen," is reported in the Flora Abredonensis; but whether in Kincardineshire or Aberdeenshire, I am unable to say. The north limit

will thus be carried into the counties mentioned. The provincial estimate will rise to 7; and the comital estimate to 8, possibly 10, ascertained counties. The range of latitude will be 53—57. Professor Arnott considers the altitude in Lanarkshire rather below 100 yards.

425. *Saxifraga aizoides*, vol. i. p. 410.

Having been ascertained in 20 counties, exclusively of the alleged stations in those of Derby and Chester, perhaps the comital estimate should be raised to 25; Stirling, Caithness, Hebrides, Shetland, remaining unrecorded for it, equally with all the Lowland counties, excepting that of Ayr. Descends to the drains by Newtyle and Glammis Railway, in Forfarshire, according to Gardiner. In the British Flora, edition 6, it is stated to grow in Wales, but no authority is cited in support of the statement.

426. *Saxifraga oppositifolia*, vol. i. p. 411.

Province 13 may be added to the true or natural area, on authority of Mr. William Stevens, who observed this species and S. stellaris "at the face of the Grey Mare's-tail." Perhaps the "tail" may be a water-fall, and have a "face," to which S. oppositifolia will furnish a purple beard. The counties of Westmoreland, Dumfries, and Dumbarton have been added to the ascertained habitats: so that the estimated census may now be raised to 20 counties, including 18 certain.

427. *Saxifraga granulata*, vol. i. p. 413.

Mr. J. T. Syme informs me that Miss Boswell has found this species in Orkney; but it seems safer at present to receive the plant as only doubtfully native there. Mr. J. G. Baker finds it ascending to 350 yards in the province of Humber; and this altitude may perhaps require a reduction of temperature to 45 or 44 at the lower figure of the range.

428. *Saxifraga cernua*, vol. i. p. 413.

Mr. Borrer states that he has "no recollection of Saxifraga cernua on Craigalleach." The statement about the finding of this species on Craigalleach, by "Mr. Borrer and Hook.", is special and positive in the Flora Scotica; but still a mistake may have originated in the manner suggested on page 414 of volume first.

429. *Saxifraga rivularis*, vol. i. p. 414.

The counties of Moray and Forfar are too doubtful to be reckoned as true habitats unless verified again. But that of Aberdeen may be added. Perhaps in former years Lochnagar may have been occasionally included by collectors in their vague aggregate of "Clova Mountains," and species found on the former hill, situate in Aberdeenshire, may have thus got erroneously referred to Forfarshire.

430. *Saxifraga tridactylites*, vol. i. p. 415.

The south limit may be traced into Cornwall, on authority of Mr. Pascoe.

431. *Saxifraga hypnoides*, *&c.*, vol. i. pp. 416, 417.

Mr. C. C. Babington, after examining the plants in their native stations in Ireland, still separates S. hirta and S. affinis from S. hypnoides. The same author refers S. pygmæa to S. muscoides. Of S. lætevirens he acknowledges to "know nothing". The station on Cheddar cliffs is estimated at 300 feet by Mr. T. B. Flower, about 400 feet by Mr. Thomas Clark. The mean temperature would seem to range up to 48 at least.

433. *Saxifraga pedatifida*, vol. i. p. 417.

Perhaps it would be better to expunge this from any corrected list of British plants, by throwing it into the category of "incognit." But it is stated to grow in the Isle of Achill, Ireland.

435. *Chrysosplenium alternifolium*, vol. i. p. 419.

The counties of Wilts and Hants may now be deemed well authenticated. Mr. Flower has sent me a specimen from the former county; and Mr. Ellis and Mr. Reeve both report it within the boundaries of Hants.

436. *Parnassia palustris*, vol. i. p. 419.

Province 14 to be added in the area; there being several authorities for the plant in the East Lowlands. Mr. Petermann found it as high as 950 yards in the West Highlands. Dr. Bromfield appeared to doubt or deny its occurrence in Hampshire.

437. *Adoxa moschatellina*, vol. i. p. 420.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

439. *Cornus sanguinea*, vol. i. p. 421.

Province 6 is to be added in the area, on faith of the Catalogues published by Mr. Gutch and Dr. Faulkner; but it would still seem to be a rare plant in South Wales, if truly a native there.

442. *Sanicula europæa*, vol. i. p. 424.

Province 6 may be added in the area, on authority of Mr. Babington's list for Pembrokeshire; and Miss Atwood finds this plant in Cardiganshire. The south limit extends to Cornwall.

444. *Eryngium maritimum*, vol. i. p. 425.

Province 8 may be added in the area, as I observed this species at Cleathorpe, on the coast of Lincolnshire, in 1851. Range of mean temperature 52—45 in accordance with the explanations on pages 3—4 of volume second.

445. *Eryngium campestre*, vol. i. p. 425.

In 1847—8 Mr. Thomas Clark and Mr. F. J. A. Hort found this plant in some plenty in the neighbourhood of

Weston in Somerset. And Mr. Francis Brent communicated specimens to the Botanical Society of London, gathered on the Banks of the Taff, near Cardiff, Glamorganshire, in October, 1848. The former confirms the species to the province of Peninsula; while the latter habitat adds that of South Wales. Whether or not the plant should be deemed a denizen in those two counties, I am myself not able to say.

448. *Smyrnium Olusatrum*, vol. i. p. 427.

Province 6 may be added in the area, on authority of Mr. Babington, and also of Mr. Motley.

449. *Cicuta virosa*, vol. i. p. 428.

Province 2 may be added in the area, on authority of Mr. Borrer, who finds the plant in Sussex. That county will accordingly be substituted for Surrey in the south limit. And the range of latitude will be made 50—57. But it has become evident since the first volume was written, that some confusion has occurred between this plant and Œnanthe fluviatilis; the name of Cicuta having been misapplied to examples of the Œnanthe. It is thus rendered probable that the true Cicuta virosa may be a rarer plant than the sketch of distribution would imply; and hence that my individual experience was not so bad a test as was supposed. The provincial area may be taken to rest on the following authorities, added after the names of the provinces; namely, Peninsula (Mr. Thomas Clark!), Channel (Mr. Borrer), Thames (Mr. Varenne), Ouse (Mr. Marsham! Mr. Paget!), Severn (Mr. Bowman), Trent (Mr. B. Carrington, &c.), Mersey (Mr. J. B. Wood, &c.), Humber (B. G.), Tyne (Wallis), Lakes (Contr.), West Lowlands (Mr. Peter Gray; Dr. J. D. Hooker!), E. Lowlands (Dr. Parsons; Rev. James Duncan), East Highlands (Dr. Dewar! Mr. W. A. Stables!), West Highlands (Dr. J. D. Hooker!). Of these provinces, the

Trent, Humber, Tyne, Lakes, and East Lowlands may be deemed to require verification, although none of them seems decidedly improbable as a habitat. Altogether the Cicuta virosa has been recorded, rightly or wrongly, from nearly 30 counties.

452. *Petroselinum segetum*, vol. i. p. 430.

Provinces 6 and 8 may be added in the area; that of South Wales on authority of Mr. C. C. Babington's Pembroke list; that of Trent on faith of specimens seen by myself in the vicinity of Lincoln. Its recently ascertained occurrence near Lincoln, may thus be deemed to give increased probability to the old record of "common near Hull," although apparently not verified there by any second botanical reporter; the same habitat being also given for Sison Amomum. But the botany of S.E. Yorkshire is very little known, as yet, and possibly both plants may grow there. Mr. Pascoe has seen a specimen gathered in Cornwall by Miss Warren. The south and north limits will thus be extended westward into Cornwall and Pembroke. The estimate of provinces will rise to 7, or perhaps to 8. The county estimate should likely be raised to 25; the plant having been already reported from 26 counties, although one of them is undoubtedly erroneous, and at least three others still uncertain.

457. *Ægopodium Podagraria*, vol. i. p. 433.

Province 6 may be added in the area, on authority of Miss Atwood, who observed this plant in Cardiganshire.

458. *Carum Carui*, vol. i. p. 434.

I did not see an example of this species during ten days of ramble about the county of Lincoln, with the express object of noting all the plants seen there; including two days about Boston, but not visiting Grantham, which are its two alleged stations.

463. *Pimpinella magna*, vol. i. p. 437.

Province 9 may be added in the true area, on faith of Dr. Dickinson's Flora of Liverpool; the Author having ascertained the correctness of Hall's Flora of Liverpool, in regard to the habitat for this plant on the Cheshire side of the Mersey. Dr. Dewar sent specimens to the Botanical Society of London, from the county of Perth; and if the species is truly native there, province 15 will be added to the ascertained area, and two degrees to the range of latitude. The provincial estimate now becomes 9 or 10.

464. *Sium latifolium*, vol. i. p. 438.

The south limit may be extended to Cornwall, but doubtfully, on the authority of Mr. J. Ward quoted by Mr. Pascoe. Does this species truly occur in the counties of Edinburgh or Haddington? I have not seen any specimen from the East Lowland province.

465. *Sium angustifolium*, vol. i. p. 439.

Province 7 may be added in the area. I observed this species in the vicinity of Chester, in 1850, but apparently within the limits of Flintshire; and it is enumerated as an Anglesea plant in Welsh Botanology. The south limit extends to Cornwall, on the authority of Mr. Pascoe.

466. *Bupleurum tenuissimum*, vol. i. p. 439.

Province 9 may be added in the area, Mr. Syme having favoured me with a specimen gathered by the side of the Wyre, opposite Fleetwood, Lancashire. That county must consequently be substituted for Worcestershire in the north limit. And the species so far makes a partial approximation from the Germanic towards the Atlantic type of distribution, though still left nearer to the former. The provincial estimate will become 8.

470. *Œnanthe fistulosa*, vol. i. p. 441.

Province 7 may be added to the area; this species grow-

ing both in Anglesea and Flint. Perhaps the county of Forfar was inaccurately reported by G. Don; Mr. Gardiner not having met with the species "to the west of Dundee" or elsewhere in the county.

471. *Œnanthe pimpinelloides*, vol. i. p. 442. (No. † 471).

Provinces 1 and 3 to be added in the area; that of the Peninsula on faith of specimens from Mr. F. H. Goulding; that of Thames on faith of specimens from Mr. E. G. Varenne. To the counties mentioned in volume first those of Somerset (Rev. W. W. Newbould), Hants (Mr. Notcutt), Sussex (Mr. G. S. Gibson!), and Essex (Mr. Varenne!) may now be added. The last-named county is the north limit on the east side of England, so far as yet ascertained. Thus, the former estimate of 4 provinces and 8 counties has been already confirmed, and possibly enough may be over-passed shortly, as the species becomes better known to English botanists, apart from Œ. Lachenalii, which was so usually mis-labelled "pimpinelloides" until within very few years past.

472. *Œnanthe silaifolia*, vol. i. p. 443.

The line of north limit is omitted at the foot of page 443, and may be read "Leicester, Worcester, Hereford." Mr. Purchas has provided my herbarium with a specimen from the last mentioned county. The Rev. W. W. Newbould informs me that both this and Œ. Lachenalii grow in the meadows between Bluntisham and the River Ouse in Huntingdonshire. It is now known satisfactorily in 5 provinces and 9 counties, and will likely be ascertained in some others that are at present unreported or reported uncertainly for this species.

474. *Œnanthe crocata*, vol. i. p. 444.

Province 8 may be added in the area; this plant having been noticed in Lincolnshire by Mr. J. G. Baker, and

also by myself, from the windows of railway carriages, in 1851. This species being frequently marked in the lists of British desiderata required by continental botanists, the collectors in this country would do well to keep a few examples of it on hand, if desirous of exchanges with foreigners.

474*. *Œnanthe fluviatilis*, vol. i. p. 445. (No. 474, b.)

A repetition of the formula of distribution, corrected to the year 1852, has been already given for this species, on page 354 of the present volume. On the several authorities indicated, the following counties are reported for it; Somerset (Mr. R. Withers), Dorset (Mr. J. Woods), Wilts (Mr. R. Withers !), Hants (Dr. Bromfield), Kent (Mr. Borrer), Oxford (Dill. — Rev. W. H. Coleman), Herts (Webb and Coleman), Essex (Mr. Varenne !), Suffolk (Rev. W. H. Coleman), Hunts and Northampton (H. C. Watson), Warwick (Mr. T. Kirk), Leicester (Rev. A. Bloxam).

475. *Æthusa Cynapium*, vol. i. p. 446.

As a truly native plant this belongs to the English type rather than to the British. Its occurrence in the more northerly provinces (15 and 18) seems to arise from horticultural or agricultural introduction.

476. *Fœniculum vulgare*, vol. i. p. 447.

Province 6 may be added in the area, on authority of Mr. Babington's list of plants seen in Pembrokeshire. And province (9) may likewise be added, on authority of the Flora of Liverpool; but Dr. Dickinson intimates a belief that it is not an aboriginal native of the sand hills at Hoylake, or of its other localities in the Liverpool circuit. Mr. Gardiner has "failed to meet with it" on the Sidlaw Hills, where G. Don stated that it grew. "F. piperatum (Ten.)," given as a second species in the second edition of

Babington's Manual, is again sunk into F. officinale in the third edition.

479. *Silaus pratensis*, vol. i. p. 449.

Province 6 may be added in the area, on authority of Mr. John Ball, who found this plant in Brecon.

480. *Meum Athamanticum*, vol. i. p. 449.

On the sides of Howgill fell, in Yorkshire, it grows at about 400 feet of altitude, according to information from the Rev. George Pinder.

481. *Crithmum maritimum*, vol. i. p. 450.

"Stated erroneously, in 'Guide to Southport,' to grow there"—Dickinson's Flora of Liverpool. Province [9] may consequently be added in the area, but only within angular enclosure at present, as a warning of error. The plant would nevertheless seem likely enough to grow on the coast rocks of this province, though not on the sands of the beach.

Xd. *Archangelica officinalis*, vol. i. p. 451.

Provinces [10] and (14) may be added in the area. See Baines's Flora of Yorkshire, Addenda, p. 142; also, the Catalogue by the Botanical Society of Edinburgh, second edition, page 2.

484. *Peucedanum palustre*, vol. i. p. 452.

Province 1 may be added to the certainly ascertained area of this plant; the station of Burtle Moor being confirmed by Mr. Thomas Clark, who gathered the plant in company with the Rev. J. C. Collins, and who has kindly sent me a specimen. The county of Somerset will thus be taken in the south limit of the species. The provincial estimate will rise to 4. The range of latitude must be changed to 51—54.

486. *Pastinaca sativa*, vol. i. p. 454.

Province 9 may be added to the true area, on faith of Dr. Dickinson's opinion expressed in the Flora of Liver-

pool, that the plant is native on the sand hills of the Lancashire coast, northward from that town. The county of Lancaster may in consequence be given as the north limit of the species on the west side of the island; unless, indeed, we recognize it as a native also of the West Lowlands or West Highlands; of the former on authority of Mr. J. T. Syme, who saw this plant "apparently wild near Maybole" in Ayrshire; of the latter on authority of Professor Balfour, who reports it "near the Inn" at Brodrick in Arran. I hesitate to receive this often cultivated plant as a native of Scotland on these two localities only; the second especially being suspicious, and the first not warranted genuine.

490. *Daucus maritimus*, vol. i. p. 456.

The province of the Mersey may perhaps require to be added to the area for this obscure species; but at present only as an uncertain habitat, so indicated by the Flora of Liverpool. I have seen numerous plants of D. Carota, with perfectly convex umbels of fruit, in a field in Surrey; and along the coast the umbels of this or D. Carota, or of both, vary much in regard to convexity or concavity. As to "triangular broad" or "oblong narrow" outline of leaf, I fear that is only a difference depending on the situation of growth or degree of succulency in the leaf. Mr. Babington now describes the English plant as D. gummifer (Lam.). There was a supposed D. Gingidium introduced into the second edition of the Manual of British Botany, between D. Carota and D. maritimus, but it is unnoticed in the third edition.

491. *Caucalis daucoides*, vol. i. p. 457.

Mr. Withers informs me that it grows at 200 yards or upwards ("650 feet") on Combe Down near Bath.

492. *Caucalis latifolia*, vol. i. p. 457.

According to Mr. Motley, three specimens were found

in Caermarthenshire. No botanist appears yet to have verified Hudson's station in Hampshire, or indirectly confirmed it by any other locality discovered in the same county.

495. *Torilis nodosa*, vol. i. p. 459.

According to the Flora of Forfarshire, Mr. Croall has found this on Montrose Links. If that station be received as a natural one, province 15 will be added in the area; and the north limit will be extended to the county of Forfar. The estimate of provinces will thus become 14; and the range of latitude will become 50—57. For the present, however, it seems safer to await a second locality northward of the Lowlands, before thus extending the area and range of the species.

497. *Anthriscus vulgaris*, vol. i. p. 461.

Province 6 may be added in the area, on authority of Mr. Motley's list of Caermarthenshire plants. South limit in Cornwall. Range of mean temperature 52—46.

498. *Anthriscus sylvestris*, vol. i. p. 461.

Not unlikely this may rise to the arctic region, judging from the mention of it by Mr. Backhouse in Phytologist, i. 1068; but the botanical notices from the pen of that gentleman are so loose and inexplicit that it is not easy sometimes to understand what he does intend to say, and of course still less easy to infer correctly that which he omits to tell us.

499. *Anthriscus Cerefolium*, vol. i. p. 462.

It is scarce worth while to add provinces (2) and (8) to the artificial area. The former might be added on account of the mention of the plant in Bromfield's Hampshire; the latter on authority of the Flora of Nottingham.

Xd. *Chærophyllum aureum*, *C. aromaticum*, v. i. p. 463.

Neither of these plants has been in any way confirmed to the counties of Edinburgh or Forfar since G. Don

supposed that he had discovered them there, and the last "in a truly wild state."

501. *Myrrhis odorata*, vol. i. p. 463.

If we reject provinces 1 and 3 from the natural area for this plant, there is still difficulty in fixing upon the counties to be substituted for Somerset and Surrey as the south limit. Glamorgan and Derby would probably be less objectionable, though I do not hold the plant certainly native in either county.

Xd. *Echinophora spinosa*, vol. i. p. 464.

In Jopling's Sketch of Furness and Cartmell Mr. Aiton records this plant in terms that would seem to imply it had been found by himself "on the shore at Sandside, near Ulverston; and near Winder Hall, Cartmell." Could the Eryngium maritimum have been mistaken for the Echinophora, by a botanist who expected to find the latter?

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503. *Viscum album*, vol. ii. p. 5.

The locality of Mickleour is within Perthshire; but I fear that the record will not warrant the extension of the native area of this plant to the East Highland province. Most likely introduced to the neighbourhood of Liverpool, according to Dr. Dickinson.

504. *Sambucus nigra*, vol. ii. p. 6.

Mr. J. T. Syme deems this species introduced into Orkney, and thinks it only a doubtful native where he has seen it in Kincardine, and in the tract of the Ochills, situate between West Perth and Fife.

507. *Viburnum Lantana*, vol. ii. p. 8.

Province 10 may be added to the true area, on authority

of the Rev. W. W. Newbould, who tells me that the shrub grows at Ardwick-le-street, Doncaster.

509. *Lonicera Caprifolium*, vol. ii. p. 10.

Mr. E. G. Varenne mentions stations in Essex where there would appear some likelihood that it may be native: —"Found in wood lanes near Monk's Hall, and on the border of a wood at Rivenhall; springing up in the hedges of the woods quite retired; in the fields in one instance, altogether away from habitations of any kind." But do not birds occasionally transport the seeds from the gardens to the more wild-seeming places?

510. *Lonicera Xylosteum*, vol. ii. p. 10.

Province (8) may be added to those on record for this shrub, but within the bracket enclosure; a very suspicious station being given in Miss Kirby's Flora of Leicestershire, on faith of Mr. Charles Thompson, who found it "in plantations" at Braunstone.

512. *Rubia peregrina*, vol. ii. p. 12.

The counties of Merioneth (Mr. A. W. Bennett) and Hereford (Mr. W. H. Purchas) have also been recently reported for this plant.

516. *Galium uliginosum*, vol. ii. p. 15.

Perhaps it would be safer to exclude the North Isles from the true area of this species. Its occurrence in Orkney has not been verified since the date of Lowe's list, so far as my notes show; and although the Author of the Shetland Flora calls it "frequent" in wet places, this record can hardly be held decisive in the case of a species that might be easily confounded with others by a young botanist.

518. *Galium erectum*, vol. ii. p. 16.

Of this doubtful species Mr. Gibson of Walden writes, "I cannot think this species distinct from G. Mollugo; growing in moist places it generally flowers earlier, but I

feel satisfied that a specimen from this neighbourhood, pronounced by Mr. C. C. Babington to be this species, is nothing more than a form of G. Mollugo." There may doubtless be some exceptions to the rule, but I think that in general the plants growing in damp ground will flower later than the same species in drier ground.

520. *Galium pusillum*, vol. ii. p. 17.

Provinces 1 and 18 may be added to the area; that of the Peninsula on the authority of Mr. Borrer, who observed this species on Cheddar Cliffs in Somerset; and Mr. Pascoe says that it has been reported to grow in Cornwall, which will require confirmation. Mr. J. T. Syme discovered it in Orkney, which satisfactorily adds the province of the North Isles. The South limit may now be traced in Somerset, Gloucester, Bedford; the last-named county requiring verification; and of course the north limit will be extended to Orkney. The provincial estimate will be increased to 11; and the comital estimate may be taken at 15. The range of latitude will become 50—60. Besides the counties here already mentioned, that of Peebles (Mr. G. S. Blackie) may be also added to the former enumeration; thus actually exceeding the estimate of 15 counties, but some of those on record may very likely be erroneous.

521. *Galium anglicum*, vol. ii. p. 18.

My herbarium has been kindly supplied with specimens of this species from Suffolk by Mr. G. S. Gibson, and from Norfolk by Mr. C. C. Babington, since volume second was published.

Xd. *Galium saccharatum*, vol. ii. p. 19.

Mr. Borrer writes that his "specimen from G. Don is like that figured in Engl. Bot. as G. verrucosum." And as that figure appears to have been taken from a true example of G. saccharatum, it would seem that the species

had been really found in Britain; though if so, it was doubtless as a casual introduction only.

522. *Galium tricorne*, vol. ii. p. 19.

Province 6 may be added in the area, on authority of Mr. Joseph Woods, who observed this species in Barry island, South Wales.

524, b. *Galium Vaillantii*, vol. ii. p. 20.

There would seem to be only one county certainly known as a habitat for this plant; namely, that of Essex. The formula of distribution will accordingly be altered so as to indicate only the restricted area, &c. of the single province of Thames, limit of Essex, inferagrarian zone, latitude between 51—52, and temperature of 49 or 49—48. In reference to the remarks on page 21 of volume second Mr. C. C. Babington says, in the Botanical Gazette, ii. p. 8, "The Cambridgeshire station is an error, a bad specimen of G. Aparine having been mistaken for it. So is the statement in my Manual that it is not uncommon." Probably this species should be disjoined from Galium spurium.

Xd. *Asperula taurina*, vol. ii. p. 23.

"On the side of the road between Whittingham and Stenton, Asperula taurina has fixed itself," according to Mr. J. C. Howden, as reported in Botanical Gazette, i. p. 78. This will add the province of E. Lowlands (14) to the artificially produced area.

529. *Centranthus ruber*, vol. ii. p. 24.

Province (9) may be added in the area, on authority of Dickinson's Flora of Liverpool; where this plant is enumerated only as an introduced species that has become established on walls.

531. *Valeriana dioica*, vol. ii. p. 25.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe's list.

532. *Valeriana officinalis*, vol. ii. p. 26.

This would seem to be less frequent than V. sambucifolia; the latter being a synonym of Smith's V. officinalis, and doubtless labelled by that name in most English herbaria.

537. *Fedia dentata*, vol. ii. p. 28.

Province 12 may be added in the area, on authority of a specimen given to me by Mr. Daniel Oliver, labelled from Arnside Knot, either within the county of Westmoreland or very close to its border line. The distribution of F. Auricla has been already treated in this volume, page 355, apart from that of F. dentata.

549. *Apargia hispida*, vol. ii. p. 38. (Leontodon.)

Provinces 9 and 12 may be added in the area; the former on authority of the Flora of Liverpool; the latter on that of Mr. Borrer, who reports this species as having been observed by himself in Cumberland.

552. *Hypochæris maculata*, vol. ii. p. 40.

Provinces 1 and 3 may now be admitted in the true area of this oft-mistaken plant. Mr. Pascoe intimates that he has seen it in Cornwall; and Mr. Gibson writes me that he had no doubt about the species having been seen there by himself. The latter botanist finds it also on Bartlow Hills, in Essex, very sparingly. The late Mr. H. B. Fielding assured me that the Llandudno plant was also true H. maculata. On these grounds some alterations must now be made in the formula of distribution. The south limit may be given in Cornwall and Essex. The north limit is in Caernarvon and Cambridge, according to present knowledge. The estimate of provinces will be 4; and that of counties 5. The range of latitude will extend southwards to 50. The mean annual temperature of the Lizard station must be taken at 52.

555. *Lactuca Scariola*, vol. ii. p. 42.

I am still unable to clear up all the uncertainties about the distribution of this plant. The county of Sussex, the only county of province 2 in which this species had been reported, must now be expunged; the Rev. W. W. Newbould having informed me that it was an error of name. But province 5, that of the Severn, may be added in the true area, on faith of a specimen kindly sent to me by Mr. Thomas Westcombe. Mr. Varenne also has given me specimens from Essex. Dr. Bossey sent specimens to the Botanical Society of London for distribution, unluckily labelled as L. saligna, from Charlton, Kent, in 1845; and these having been distributed without correction of name, they may have drawn other botanists into error. But the plant of Plumstead Practice-ground, in the same county, is true L. saligna, and has been distributed through the same Society by Mr. Dennes and myself.

557. *Lactuca muralis*, vol. ii. p. 43.

Province (15) may be enclosed, and also the county of Moray, as not being within the true native area; the Rev. G. Gordon deeming this species introduced to the station near Elgin.

558. *Sonchus palustris*, vol. ii. p. 44.

Three localities are reported for this species in the Flora Hertfordiensis; but all of them too dubious for reliance in the case of a species that has been so frequently mistaken.

564. *Crepis biennis*, vol. ii. p. 48.

Mr. Borrer intimates that this plant abounds in many places in South Kent; and I found it sparingly in the neighbourhood of Peterborough, in the northern end of Northamptonshire.

566. *Crepis succisæfolia*, vol. ii. p. 49.

I am still unprepared to indicate the range of altitude

for this plant. Perhaps the height may safely be given at 300—700 yards, and probably both lower and higher than that range.

567. *Crepis paludosa*, vol. ii. p. 50.

Mr. Munford reports this as found at Hunstanton in West Norfolk, a station which will require to be confirmed before the province of Ouse can be confidently added in the true area.

571. *Hieracium nigrescens*, vol. ii. p. 53.

The plant of Cumberland is now referred to H. atratum (Fries); and to which, whether species or variety, doubtless many of the Highland stations belong, that have been reported for H. nigrescens.

572. *Hieracium murorum*, vol. ii. p. 55.

This is confirmed to the province of the Mersey by the Floras of Liverpool and Manchester. That of South Wales still remains without a witness among my compiled notes. It is, I suppose, the H. cæsium (Fries) of Babington's Manual, third edition, though the H. murorum of English botanists generally.

573. *Hieracium sylvaticum*, vol. ii. p. 57.

I am still unprepared to cite an authority or certain locality for this species in the Lake province.

575. *Hieracium Lawsoni*, vol. ii. p. 58.

There is some probability that this species was picked on Hoy Hill, Orkney, by Mr. Syme; but the specimen has unfortunately been lost.

Xd. *Hieracium cerinthoides*, vol. ii. p. 59.

Mr. Borrer's garden plant mentioned on page 59 of the second volume, was not of British origin; but it is believed by him to be the same species with the specimens from G. Don. Might not the latter be of garden and foreign origin only?

584. *Hieracium umbellatum*, vol. ii. p. 65.

Province 12 may be added in the area, on authority of Mr. Daniel Oliver, who observed this species in a wood near Scotby, Cumberland. Mr. Bladon finds it at 300 yards ("800 to 1000 feet") near Pontypool. And it may be growing at a greater altitude by the "Common Burn, Cheviot," where Mr. G. R. Tate observed this species in 1851.

586. *Borkhausia taraxacifolia*, vol. ii. p. 67.

Mr. Borrer confirms Surrey as a habitat, having seen this species "in corn land at Cobham, Surrey." He also added (Bot. Gaz. ii. 95) the words, "and have one Sussex station near Tunbridge Wells"; which was a comital error, as Mr. Borrer himself has subsequently informed me, the station being within the boundary of Kent.

589. *Arnoseris pusilla*, vol. ii. p. 69.

Mr. Pascoe marks this in his Catalogue, as a species reported to occur in Cornwall, but not seen in that county by himself.

596. *Carduus acanthoides*, vol. ii. p. 75.

Province 9 may be added in the area, as I recently observed this species near Chester. It will be safer to enclose [18] as erroneous; no confirmation of this species in the province of the North Isles being yet known to me.

597. *Carduus tenuiflorus*, vol. ii. p. 76.

Reported to have been found northward to Elgin, but I do not know the individual authority for its occurrence there.

598. *Carduus Marianus*, vol. ii. p. 77.

Province (16) may be added in the area, on authority of the Flora Glottiana; but it is hardly to be admitted, without the enclosure of the number, to indicate much suspected nativity for the plant in the county of Dumbarton.

601. *Carduus palustris*, vol. ii. p. 79.

Mr. Syme confirms this as an Orkney species, thus giving increased probability to the suggestion that it was the "C. crispus" of Lowe's list in Barry's History.

603. *Carduus Forsteri*, vol. ii. p. 81.

This is certainly extinct in the station by Whitemoor Pond, mentioned in volume second, page 82. Of the plant from Mr. Borrer, there also alluded to, that botanist writes, "It is very possible that my garden plants, raised from seeds of a true plant (now dead) brought from the Frant station, are hybrids between it and C. monspessulanus which grew hard by. I have seen genuine C. Forsteri only in Frant Wood, and near Eridge, and on Ditchling Common, always among C. pratensis and C. palustris." The true C. Forsteri did not seed in my garden, where it was kept in a flower-pot, away from any other species of Carduus for two seasons, and was then unfortunately destroyed by the subterranean larva of some large moth.

604. *Carduus pratensis*, vol. ii. p. 82.

Ascends to 300 yards in the province of Severn, county of Monmouth.

605. *Carduus tuberosus*, vol. ii. p. 83.

There is yet no other habitat certainly known for this species, besides the original one, in the county of Wilts, from which Mr. Babington possesses a specimen, picked by the Rev. J. Downes. Mr. Woodward's plant has not hitherto flowered in my garden, but its leaves of 1851 had become so like those of ordinary C. pratensis, that I can now scarcely entertain a doubt of the species to which it should be referred being C. pratensis rather than C. tuberosus. Still this is not quite certain. I was indebted to Mr. T. B. Flower for the sight of a garden example of Mr. Westcombe's Carduus (supposed, "tuberosus") from Glamorganshire, mentioned on page 83 of volume second;

and I have no hesitation in referring it to C. Woodwardii. Thus, assuming the Wilts C. Woodwardii to be simply C. pratensis in a luxuriant state, so also is the Glamorganshire species. C. Woodwardii differs from ordinary C. pratensis by its much more pinnatifid and lobed leaves, and its heads of flowers often two or three almost close together, not each one single on a long peduncle. The root of C. Woodwardii has fleshy fusiform fibres or tubers; and it is also stoloniferous, like C. pratensis.

606. *Carduus acaulis*, vol. ii. p. 84.

The north limit may be traced eastward into North Lincoln, where I saw this species in 1851, in the vicinity of Louth.

608. *Onopordum Acanthium*, vol. ii. p. 86.

Mr. Pascoe has seen a specimen of this species, which was said to have been picked in Cornwall, where he supposes its true nativity to be somewhat doubtful.

Xd. *Centaurea Jacea*, vol. ii. p. 88.

"My one Henfield plant of Centaurea Jacea agreed exactly, I think, with continental specimens. After its removal to my garden self-sown plants, precisely like the original, were produced; and it was from one of these, transplanted to Mr. Dawson Turner's garden at Yarmouth, that the English Botany figure was made. After several years the species disappeared from my garden" (Mr. Borrer's 'Notes on the Cybele Britannica'). On another point mentioned in volume second, the different census of C. Jacea and C. nigra in Sweden, Mr. C. Hartman wrote to me thus; "Our determination of these two species agrees exactly with the Linnean Herbarium. The latter is unknown in Sweden, while the former is frequent."

610. *Centaurea nigrescens*, vol. ii. p. 88.

"The radiate-flowered plant is common in Sussex," writes Mr. Borrer. "I never could distinguish it as a

species from C. nigra." The fully radiate form passes by intermediate links into ordinary C. nigra; and the other book-characters of C. nigrescens may be easily found in indubitable examples of C. nigra, *ex. gr.*, the distance or proximity of the involucral appendages, and their more or less imperfectly covering the scales of the involucrum.

612. *Centaurea Cyanus*, vol. ii. p. 89.

I am not able at present to quote any record of this species in the provinces of South Wales and the Lakes; though I think to have seen it in the latter province, very likely near Ambleside. Mr. Edmondston deemed it "probably introduced" to the Isles of Shetland; and he was not inclined to err on the side of scepticism against the nativity of plants.

615. *Centaurea Calcitrapa*, vol. ii. p. 91.

The south limit may be extended westward into Cornwall, on authority of Mr. F. P. Pascoe.

Xd. *Calendula arvensis*, vol. ii. p. 92.

Mr. Borrer records that this plant "grew formerly during several years, near Southwick, Sussex, till that part of the beach was washed away."

618. *Bidens tripartita*, vol. ii. p. 93.

Province 15 may be added in the area, on authority of Mr. J. T. Syme, who has seen this species in the little county of Clackmannan, taken as a part of Fife in the text of the present work, but as part of West Perth in the map. The north limit may accordingly be carried to Fifeshire. The estimate of provinces will rise to 16. The range of latitude will become 50—57. The Edinburgh Society's Catalogue includes among their marked plants those of the north and south sides of the Forth. That Catalogue was my authority for province 14 in the area, though possibly the plant may occur only in province 15, on the north side of the Forth.

624. *Artemisia maritima*, vol. ii. p. 97.

The south limit may likely extend to Cornwall, as Mr. Pascoe includes the species among those that are reported to occur in Cornwall, although not verified there by himself, and the habitat is sufficiently probable.

628. *Gnaphalium margaritaceum*, vol. ii. p. 100.

In reference to the existence of this species on the western side of England, the following testimony from Mr. W. H. Purchas is deserving of consideration; — "Bank of the Wye, between Coldwell and English Bicknor, far from any house, and where it was seen in much greater abundance than it is now, by my father, perhaps twenty years ago."

630. *Gnaphalium sylvaticum*, vol. ii. p. 101.

In uniting G. norvegicum with this species, we may apparently carry its ascending distribution considerably higher than was stated in volume second. Mr. James Backhouse reports the G. norvegicum as seen in dangerous places on Lochnagar and in Canlochen (Bot. Gaz. iii. 45); so that it doubtless occurs in the arctic region, and probably in the midarctic zone at 800 or 900 yards of altitude.

633. *Filago gallica*, vol. ii. p. 104.

Mr. Borrer writes, "I have Kentish specimens from Mr. Woods, not of recent date." It would thus seem that the county of Kent either is or has been the south limit; and if still so, the other two counties can be indicated for the north limit only.

634. *Filago minima*, vol. ii. p. 105.

The south limit may be extended to Cornwall, on the authority of Mr. Pascoe's list.

635*. *Filago apiculata*, vol. ii. p. 106.

I am yet able to add only one more to the few counties before enumerated for this species; namely, that of

Suffolk, from which specimens have been sent by Mr. C. C. Babington and Mr. E. G. Varenne. It may be still expected in many other counties, as it becomes more familiar to the eyes of English botanists.

635*. *Filago spathulata*, vol. ii. p. 106.

In addition to the counties before enumerated, I have since seen this species in Middlesex and North Hants, and have received a specimen that was picked in Bucks.

636. *Petasites vulgaris*, vol. ii. p. 107.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe. Under the circumstances mentioned in volume second, it seems better to reject the province of North Isles [18] as erroneously recorded for the present species, and also the altitude of 500 yards. The north limit would thus be traced in Moray (Coll. Mor.), Aberdeen (Flo. Abred.), Argyle (Prof. Balfour). I have seen no specimen in or from any county north of the Forth and Clyde.

Xd. *Petasites albus*, vol. ii. p. 108.

Naturalized in Mains Flowery Den, Forfarshire, according to a Report of the Dundee Nat. Assoc. in Bot. Gaz. ii. 21.

Xd. *Homogyne alpina*, vol. ii. p. 110. (Tussilago.)

Mr. Borrer says of this, "My specimen from G. Don is of the true plant." Such being the case, I do not understand why the Homogyne alpina should be totally excluded from British Floras (*ex. gr.* Bab. Man.), while plants less likely to occur in Britain, which rest on no safer authority, are admitted even as genuine natives (*ex. gr.* Potentilla tridentata). I do not, however, believe this to be a British species.

639. *Erigeron acris*, vol. ii. p. 110.

I think this species still remains unrecorded from any locality in Scotland, except the "Sands of Barrie and

neighbourhood of Arbroath." But if so, it is remarkable that Lightfoot should have described the plant in his Flora Scotica, as being frequent in dry mountainous pastures. The same indication is repeated in Hooker's Flora Scotica, where it is not given on Lightfoot's authority, but as if it expressed a fact ascertained by the Author of the second Flora Scotica. That second indication, however, being in the very words of Lightfoot, may have been copied from the work of the latter without acknowledgement, a practice too often followed in other instances in Hooker's Flora Scotica. The practice is faulty, because it gives the false appearance of two authorities for a record, where there was only one; and that one perhaps only an error in the present instance.

642. *Solidago Virgaurea*, vol. ii. p. 112.

The term 'sylvatical' has accidentally been left here instead of 'sylvestral'; and it suggests a few words of explanation. In making my series of terms to express situations of growth, the former of these two adjectives was first adopted on the same analogy that *via* is converted into *viatical*. Subsequently, it appeared more desirable to follow the analogy of *agrestal*, &c., and the change was made. I think it is Mr. Hort who has since somewhere objected to the term 'sylvestral', because Linneus used the word *sylvestris* to express a *wild* plant, in contradistinction to *sativus* for a *cultivated* plant. This is true; and possibly the word 'sylval' or 'sylvatical' might have been thought better; although I am not aware that *sylvestral* has ever been used or proposed as an English word to express *wild*. The sylvestral plants are woodland plants; and in its primary meaning *sylvestris* will well enough correspond with our own term *woodland*.

644. *Senecio sylvaticus*, vol. ii. p. 113.

Province 18 may be added to the area, on authority of

Mr. Syme, who found this species in Orkney. The area thus becomes "general." The latitude may not actually exceed the line of 59, although in conformity with the explanation before given, on page 60 of volume first, the range of latitude should now be entered as 50—60.

648*. *Senecio aquaticus*, vol. ii. p. 116. (No. 648, b.)

This appears to me quite distinct from S. Jacobæa after experimental cultivation under various changes of soil and moisture. Independently of the less conspicuous characters, the loose and spreading ramification of this species, contrasted against the closer and more corymbose inflorescence of S. Jacobæa, will afford a diagnosis at the distance of many yards.

Xd. *Senecio erraticus*, vol. ii. p. 117.

In reference to this plant, and to S. barbaræfolius alluded to on page 115 of volume second, Mr. Babington writes thus;—"Senecio barbaræfolius (Reich.), I believe, with Koch, to be the large form of S. aquaticus, which I formerly mistook for the S. erraticus (Bert.), but do not now distinguish specifically from S. aquaticus. I have never seen the true S. erraticus in Britain." (Bot. Gaz. ii. 9).

649. *Senecio paludosus*, vol. ii. p. 118.

It appears now very doubtful whether this species still remains in our flora. Mr. G. S. Gibson writes of it,—"This I believe to be now quite extinct in Britain; having been so in the fens of Cambridge many years, and sought in vain in Lincolnshire by my friend E. Forster. I doubt its having been gathered by any living botanist."

651. *Cineraria palustris*, vol. ii. p. 119.

Mr. Pascoe adds Cornwall to the list of counties that have been reported for this species; I know not upon whose authority.

655. *Inula Helenium*, vol. ii. p. 121.

Province (8) may be added in the area, but under enclosure at present. In a list of Lincolnshire localities given to me by Mr. Thomas Westcombe, who obtained it from Mr. J. H. Thompson, the name of this plant occurs as one found at "Castle Carlton, near Louth"; but whether the locality is intended to be understood as indigenous or the contrary, I do not know.

657. *Inula crithmoides*, vol. ii. p. 122.

The county of Sussex may be added to those enumerated for this plant; Mr. G. S. Gibson having sent specimens to the Botanical Society of London, gathered at Emsworth, where it was pointed out to him by Mr. Borrer.

661. *Chrysanthemum segetum*, vol. ii. p. 125.

In reference to the query about a native name for this plant, Miss Atwood obligingly writes, "The South Wales name for this common plant is *Graban yr yd.* '*Graban*' signifies anything that is in clusters, and '*yd*' is corn. The name of Ox-eye is literally translated into Welsh, as '*Llygach yr ych*', or 'Eye of the Ox.'"

664. *Pyrethrum inodorum*, vol. ii. p. 127.

The Orkney isles may be indicated in the north limit, on authority of Mr. J. T. Syme.

667. *Anthemis nobilis*, vol. ii. p. 129.

This was seen near Swanbister, in Orkney, by Mr. J. T. Syme (Bot. Gaz. ii. 106), but it may be safer at present to receive the province of North Isles (18) as beyond the truly indigenous area. Professor Balfour would seem to have considered it (Phytologist, ii. 309) a true native of Islay. A misprint of *High*-lands, instead of *Low*-lands, occurs on page 130 of volume second, doubtless through an error of transcription.

668. *Anthemis arvensis*, vol. ii. p. 130.

This has been reported to occur in Cornwall, according

to Mr. Pascoe's list, but has not been seen in that county by himself.

669. *Anthemis Cotula*, vol. ii. p. 131.

Province 9 may be added in the area, on authority of the Floras of Liverpool and Manchester; but the plant would seem to be rare about both those towns, and not to be certainly found within a wide circuit around Liverpool. Mr. Syme also marks it as a plant seen by himself in Lancashire.

670. *Anthemis tinctoria*, vol. ii. p. 131.

Has any living botanist ever picked a specimen of this species in England? Has it ever been found in Britain elsewhere than about ballast heaps or in some equally to be suspected spot? I am unable to give an affirmative response to either of these questions. But Mr. Babington enumerates the plant as English and Scottish, "possibly introduced but *now* having the appearance of being a true native." I do not know *where* it has any such appearance.

673. *Achillea tomentosa*, vol. ii. p. 133.

An Alien, which ought never to have been entered in the lists of British plants, according to information given in the sixth edition of the British Flora, to the following effect:—"Formerly much cultivated as a medicinal plant, as well as for its beauty. Of the Scotch stations the one near Balvie seems to be given on the authority of a solitary specimen escaped from Mugdock Castle garden: the Paisley one is quite erroneous: that at Auchlunkart was in the sand of a river, whither the plant had been washed down from a portion of an old garden about a hundred yards distant. The Irish habitat cited in E. Bot., and the new one mentioned above, are no doubt equally questionable."

674. *Achillea tanacetifolia*, vol. ii. p. 134.

I fear this may be a third instance, in one genus, of a species being too hastily introduced into our Floras and Catalogues, as a genuine native. Mr. Borrer writes thus of Mr. Hardy's stations: "In July 1849, Mr. Hardy kindly accompanied me to three places around Ringing Low where he had found the plant, — in one, as lately as last year; but it had disappeared from all" (Bot. Gaz. ii. 96, 1850). Notwithstanding this report, however, Mr. Babington (who first, I believe, published the plant as British) still describes it as an unquestioned native (1851) and repeats the locality of Ringing Low; so that there would seem to be some reason, however faint, for still believing it a British species.

676. *Campanula patula*, vol. ii. p. 136.

It may be safer to exclude the province of Peninsula [1] from the true area, until confirmed by more recent and better authority. Those of Ouse, South Wales, and Lakes, are liable to suspicion; although perhaps not sufficiently so to warrant their exclusion at present.

677. *Campanula Rapunculus*, vol. ii. p. 137.

Province (9) may be added to the area of this species, as an introduced plant, on faith of a locality recorded in Buxton's Manchester Flora.

679. *Campanula rapunculoides*, vol. ii. p. 138.

It may be as well to confirm the propriety of having excluded the Channel province from the area of this plant, while resting only on the authority of Mr. Curtis, by quoting the following explanation, taken from a letter written by Dr. Bromfield after the second volume of the Cybele was in print: — "Mr. Curtis's Dorset 'C. rapunculoides' was, as I afterwards found by looking at the drawing made for British Entomology, only C.

Trachelium. Mr. Curtis had been misled by the late Professor David Don having hastily named it C. rapunculoides, and I only just saw the error in time to prevent the plant being published as such." Mr. Charles Prentice found some few plants of it growing with Geranium pratense, on limestone, five or six miles from Cheltenham, in a doubtful situation, where it might be supposed wild, or, to which it might have been introduced.

684. *Specularia hybrida*, vol. ii. p. 142.

Always appears to have been brought with seeds of the crops among which it is found in Herefordshire, according to Mr. Purchas.

685. *Phyteuma orbiculare*, vol. ii. p. 143.

Ascends to 100 or 200 yards; certainly exceeding the former altitude, and perhaps attaining to the latter, on the chalk downs of Sussex.

687. *Jasione montana*, vol. ii. p. 143.

This plant is included by Miss Boswell, in a list of those observed by herself in Orkney; where it is probably rare, as not having been reported there by other botanists.

688. *Lobelia urens*, vol. ii. p. 144.

The following notice was communicated to the Phytologist, iii. p. 1051, by Mr. W. Thomson: "A living specimen of this rare plant has just been presented to me by the Rev. J. Dix of Charing. It was found by Mrs. Dix in a wood near Ashford, on the 27th of August last; and since it is usually supposed to be a Devonshire plant, its discovery in the county of Kent may be deemed worthy of record. Mr. Dix informs me that the plant grew about a yard from the path in a chestnut wood, which had been cut down; that it was in full vigour, and that its centre formed a superb spike of flowers. He adds that there is no apparent possibility of its having been

placed there through man's instrumentality." This is just one of those loosely expressed records, unfortunately so frequent among botanical writers, which tends to mislead readers by only half telling the circumstances important to be known. It is not directly stated that a single root only was found at the spot mentioned, and yet this would seem to be fairly inferred from what is said about "it" and "its centre." As to the "no apparent possibility," we may suppose that the chestnut wood had been planted there by "man's instrumentality;" and if man could intentionally plant chestnut trees there, it may reasonably be supposed a "possibility" that he could also plant a Lobelia there intentionally, or sow it there accidentally. Of course, the county of Kent will need to be confirmed on safer authority before it can be added to the true area of this local species. Wr. Westcombe informs me that it was still to be seen in the Devon station in 1851.

689. *Lobelia Dortmanna*, vol. ii. p. 145.

Found in Orkney by Mr. J. T. Syme, which raises the number of ascertained counties to 26; also extending the range of latitude one degree, and carrying the north limit to those Isles.

692. *Erica cinerea*, vol. ii. p. 148.

The estimate of counties has been inadvertently printed at 82, although in the text following the formula two counties are expressly mentioned, from which this species appears to be absent. Thus, the estimate should not exceed 80 at the highest.

696. *Menziesia cærulea*, vol. ii. p. 151.

Several tufts were seen by Mr. Borrer in 1851, "in Drumochter or Drum-uachdar," on the confines of Atholl and Badenoch, "among the heath and cranberry." This is the original station of the Atholl Sow, as I am informed

by Mr. Borrer; and unless I mistook the hill, it is without the boundary of Drumochter Forest.

698. *Azalea procumbens*, vol. ii. p. 152.

Reported to grow on the "summit" of Loch-na-gar; but by a loose writer whose language cannot always be taken strictly to mean what the words and sentences would literally signify. The actual summit of Loch-na-gar is usually considered to exceed 1250 yards.

704. *Vaccinium uliginosum*, vol. ii. p. 156.

Found in Orkney by Mr. J. T. Syme; which should therefore be mentioned in the north limit. Still unverified from North Wales.

707. *Pyrola rotundifolia*, vol. ii. p. 159.

Province 5 may be added to the ascertained area, on faith of a specimen from Chatley Moss, Staffordshire, communicated by the Rev. R. C. Douglas. And province 13 is rendered very probable by the name of this species being marked in Mr. Peter Gray's list of plants seen in Kirkcudbrightshire; but it does not appear that any special attention was given to the accuracy of the specific name, the absence of which will unavoidably leave some slight uncertainty in the case of a plant for which P. media has been so frequently mistaken. Mr. Borrer intimates that he has not seen any specimen from the old-recorded station of Charlton Forest in Sussex; but that he has the true plant from two stations in Kent. Mr. G. S. Blackie reports this species in Peebles. The provincial estimate may now be raised to 8, and the comital estimate to 15.

708. *Pyrola media*, vol. ii. p. 160.

Provinces 2 and 9 may be added in the area; that of Channel, on the authority of Mr. Borrer, who finds this species in St. Leonard's Forest; that of Mersey, on faith of the station at Mottram, recorded in Buxton's Botanical Guide. The provincial estimate will thus rise to 12.

The range of latitude will be increased to 50—61. Kirkcudbright may be added to the enumeration of counties, on authority of Mr. Peter Gray.

709. *Pyrola minor*, vol. ii. p. 160.

Mr. Borrer has never seen this species in or from Sussex or Kent. Except for the single station near Romsey in South Hants, the south limit of this species, according to existing knowledge, would be traced in the counties of Glamorgan, Gloucester, Oxford, Bucks, and Surrey.

710. *Pyrola secunda*, vol. ii. p. 161.

Mr. Borrer never found this in Sussex; the name having been inadvertently given to me by Dr. Bromfield, who probably intended to have written P. media, or had misunderstood Mr. Borrer on the subject. By some mischance, the Rev. G. Pinder's station of Cautley Crags, near Sedbergh, is misprinted N.E. Yorkshire, instead of N.W. Yorkshire, in volume second. Mr. Syme has seen a specimen from Kincardineshire.

712. *Monotropa Hypopitys*, vol. ii. p. 163.

In any statistical estimates it would be safer to exclude the provinces of South Wales, Tyne, and Lakes, until better confirmed; although none of them can be pronounced an improbable habitat in itself, apart from the absence of good and recent authority.

719. *Gentiana Pneumonanthe*, vol. ii. p. 170.

Province 3 may now be taken into the true area, on faith of the station near Worplesdon in Surrey, recorded in the Botanical Gazette, vol. ii. p. 227. This will raise the provincial estimate to 9.

721. *Gentiana Amarella*, vol. ii. p. 172.

Miss Boswell observed this species in Orkney, which should consequently be named in the north limit.

723. *Cicendia filiformis*, vol. ii. p. 174.

Province 6 may be added to the area, on the authority

of Mr. Babington, who discovered this plant on Penally Warren, Pembroke. That county will thus become the north limit. The provincial estimate will rise to 3, and the comital estimate to 6, both certain. Perhaps the number of counties will yet increase beyond 6.

724, c. *Erythræa pulchella*, vol. ii. p. 176.

Province 8 may be added in the area, on authority of Mr. J. H. Thompson's localities of Lincolnshire plants.

726. *Villarsia nymphæoides*, vol. ii. p. 177.

Mr. George Reece has recorded this as found in the river Avon, between Pershore and Eckington, Worcestershire; but whether truly wild there, may be difficult to decide upon.

728. *Polemonium cæruleum*, vol. ii. p. 179.

Mr. Withers informs me that it occurs in a small coppice at Bathford near the fourth mile-stone from Bath, where it is probably an escape from cultivation, although there is no house within half a mile from the spot. Mr. Keys also finds it in Devon, but near some cottages. Thus province first (1) may be added to the enclosed area, as being within the actual limits, though not within the indigenous limits of the species.

729. *Convolvulus arvensis*, vol. ii. p. 179.

As the habitat of Orkney apparently remains unconfirmed, it will be safer to hold this species a casual introduction there, when seen by Dr. Neill, rather than a true native. But in such case, two degrees of latitude should be deducted, and the range reduced to 50—58.

731. *Convolvulus Soldanella*, vol. ii. p. 181.

Provinces 8 and 15 may be added in the area; that of Trent on authority of Mr. J. H. Thompson, who found this plant on the coast of Lincolnshire; that of East Highlands, on the authority of Mr. J. T. Syme and Mr. Croall, who report the species from the coast of

Forfarshire. Indeed, the omission of province 15 in volume second, may be deemed accidental only; the county of Forfar being there indicated in the north limit, although the No. of the province was omitted in the area.

733. *Cuscuta Epilinum*, vol. ii. p. 182.

Province 2 may be added in the area of this species as a 'colonist;' Mr. Borrer finding the plant in Sussex, but he believes it introduced to that county with seeds of flax.

734. *Cuscuta Epithymum*, vol. ii. p. 182.

Provinces 9 and 11 may be added in the area; that of Mersey on authority of Dr. Dickinson's Flora of Liverpool; that of Tyne on authority of the Reports of the Berwick Naturalists' Club. Northumberland will now be indicated in the north limit; and the provincial estimate must be raised to 11 or perhaps 12.

735. *Cuscuta Trifolii*, vol. ii. p. 183.

Province 9 may be added in the area, on faith of the Flora of Liverpool.

739. *Atropa Belladonna*, vol. ii. p. 186.

Province 9 may be added in the area, on authority of Mr. H. B. Fielding, who informed me that it occurs on the shores of the bay between Poulton and Barr, four miles from Lancaster, attaining seven feet in height.

Xd. *Verbascum phlomoides*, vol. ii. p. 192.

This was scarce deserving of record. Mr. Borrer intimates that it appeared in a corn field near Broadwater, Sussex, several years ago; and that he believes it is not to be found there now. V. ferrugineum, next mentioned in volume second, is only a synonym of V. phœniceum; the latter previously mentioned as having occurred in Anglesea, fifty years ago.

748. *Veronica verna*, vol. ii. p. 194.

In order to bring the correction into immediate proximity

with the error, it may be well to note here that the station of "East Hill, Hastings, Sussex," was recorded by Mr. Maw in the Botanical Gazette, vol. i. p. 307. But in vol. iii. p. 98, of the same periodical, Mr. Borrer intimated that V. arvensis only, not V. verna, could be found in the place so reported. The Channel province [2] is thus shown to be only an erroneous record for V. verna.

763. *Bartsia alpina*, vol. ii. p. 204.

According to information derived from Mr. J. G. Baker and Mr. D. Oliver, some changes will require to be made in the formula of distribution. The sixth line may run thus, "A. A. regions. Superagrarian—Midarctic zones." The next line will be, "Descends to 500 yards in Tyne (J. G. Baker)." And the succeeding one, "Ascends to 700, probably to 1000 yards, in E. Highlands." The range of mean annual temperature may be indicated at 43—38; the former number being misprinted 48 on page 204 of volume second. The situation is 'Uliginal,' rather than 'Rupestral.' At first thought these terms would seem widely different in signification; and so in fact they are. Yet it is occasionally difficult to apply the terms distinctively to the arctic species; several of them growing in crevices of rocks, filled with loose boggy mould, and over or through which water is usually trickling down. Strictly, these are still 'uliginal' plants; but their places of growth being usually described as "rocks," the term 'rupestral' scarcely appears a misapplication, unless the occurrence of the same species also in boggy places, away from rocks, directs attention to it, and gives the explanation. Veronica alpina is a somewhat similar instance with the Bartsia alpina. In the genus Saxifraga, we may get a series that passes from the rupestral to the

uliginal almost step by step, thus; S. cernua, nivalis, rivularis, oppositifolia, stellaris, aizoides, Hirculus; though I am not quite sure of the position of S. rivularis and S. Hirculus in the transition from rock to swamp.

767. *Rhinanthus angustifolius*, vol. ii. p. 206. (R. major.)

Mr. Pascoe marks this as a species reported to occur in Cornwall, but which has not been seen in that county by himself. The change of name above indicated, from 'major' to 'angustifolius,' was adopted in the third edition of the London Catalogue, following the sixth edition of the British Flora; but it appears to be of doubtful propriety; and Mr. C. C. Babington still adheres to the former name in the third edition of his Manual.

769. *Melampyrum arvense*, vol. ii. p. 209.

The county of Essex (Mr. G. S. Gibson!) may be added to those enumerated for this species. Dr. Bromfield deems the species introduced into the Isle of Wight; so that Herts and Essex may be perhaps more appropriately given for the south limit. And probably the term of 'Colonist' would be better applied to the plant than that of 'Native.'

770. *Melampyrum pratense*, vol. ii. p. 209.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

774, b. *Scrophularia Ehrharti*, vol. ii. p. 212.

Province 5 may be added in the area, on faith of a record of its occurrence in Herefordshire, given in the Botanical Gazette, ii. 305.

777. *Scrophularia vernalis*, vol. ii. p. 214.

The term 'septal' may perhaps be more appropriate than 'viatical' for this species, if it be retained as sufficiently British to warrant its position in the category of 'denizen.'

779. *Antirrhinum majus*, vol. ii. p. 216.

Province (9) may be added to its area, as an alien, on authority of Dickinson's Flora of Liverpool.

782. *Linaria spuria*, vol. ii. p. 217.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

783. *Linaria Elatine*, vol. ii. p. 218.

Province 9 may be added to the native area, on authority of Mr. Sansom, who observed this species sparingly near Parkgate in Cheshire, a likely habitat. York and Chester may therefore be indicated for the north limit. And the estimate of provinces will rise to 10.

784. *Linaria repens*, vol. ii. p. 219.

It will be safer for the present to contract the native area indicated for this species, by enclosing the two Lowland provinces (13, 14) which rest on slight authority not recently confirmed. And that of Trent [8] should remain in suspense as not unlikely an error. Mr. Borrer says that some of the white-flowered L. repens, brought from Coniston Water, as mentioned on page 220, afterwards produced the usual streaked flowers in his garden. Thus, at present, the counties of Westmoreland and Bedford may be indicated for the north limit, on the west and east sides of England. The range of latitude is contracted to 50—55. The provincial estimate sinks to 7, and the comital estimate to 15.

785. *Linaria vulgaris*, vol. ii. p. 220.

In the Phytologist, vol. iii. p. 627, Dr. Bromfield described a variety of this species, found by him in the Isle of Wight, under the suggested name of L. speciosa. In Babington's Manual, third edition, the same plant appears as a variety "latifolia" of L. vulgaris. Examples of it raised in my garden from seeds sent by Dr. Bromfield

prove true L. vulgaris. Glabrous pedicels, given as one character of that variety, are not unfrequent in wild plants of ordinary L. vulgaris. The leaves of the variety, equally as of the species, vary from linear to lanceolate, even on the very same example under different conditions of soil, &c. As commonly happens in other plants, the size of the flowers in L.-vulgaris bears a relation to their number in the raceme, and to the luxuriance of the foliage; this being what any physiological observer of plants might anticipate would be the case, although it is one of those ordinary variations of species, the true nature of which the describers of specimens seldom appear to understand: In short, the supposed L. speciosa is rather a casual variation than a true variety, and would probably lose its peculiarities if kept in a small flower-pot sparingly watered, and exposed to the sun.

788. *Limosella aquatica*, vol. ii. p. 222.

The south limit extends into Cornwall, if we may safely rely upon a record in a paper by Mr. E. T. Bennett in Phytologist, iv. page second; but that paper indicates deficiency of botanical knowledge in the writer, and inexperience in the art of expressing ideas with the pen. The alleged fact is not in itself improbable, but is rendered so by the terms in which it is reported, and by other remarks with which it is associated. Was the Littorella mistaken for Limosella in Cornwall? I suspect the record of the latter in Turner and Dillwyn's Guide, under the county of Northampton, should have belonged to the former plant instead.

789*. *Mimulus luteus*, vol. ii. p. 224.

This has been sent to me from Kincardineshire by Mrs. Dickson; and Mr. G. S. Gibson reports it as abundant in a moist meadow near Dunoon.

790. *Orobanche major*, vol. ii. p. 224.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

791. *Orobanche caryophyllacea*, vol. ii. p. 225.

Mr. Borrer intimates that the Orobanche from Berry Head, mentioned in volume second, was O. hederæ, not the present species. The same excellent botanist refers the Surrey plant, also there mentioned, to O. elatior. Mr. Varenne has perhaps found the O. caryophyllacea near Sudbury, in Suffolk; but this specific name is uncertainly applied to the plant found.

798. *Orobanche minor*, vol. ii. p. 228.

Parasitic on Carduus nutans also, according to the Rev. J. S. Henslow, in Bot. Gaz. i. 277. I think too on Daucus Carota in Surrey.

793*. *Orobanche amethystea*, vol. ii. p. 228. (No. 792*.)

It is the Whitsand Bay near Plymouth, not the one so called near the Land's End, at which this species is found by Mr. Hore. Perhaps it occurs also near Eastbourne in Sussex. But I strongly incline to regard the English plant as simply O. minor.

793*. *Orobanche picridis*, vol. ii. p. 226. (No. †.)

Province 2 may be added in the area, on authority of Dr. Bromfield, who found this plant in the Isle of Wight. Messrs. Newbould and Babington, it appears, jointly found the single specimen near Giltar Head in Pembroke.

797. *Lathræa squamaria*, vol. ii. p. 232.

Observed by Mr. Syme abundant in Castle Campbell Glen, Clackmannan or Fife.

Xd. *Acanthus mollis*, vol. ii. p. 232.

This has been introduced by some unascertained agency into St. Agnes, one of the Scilly Isles, where it is stated now to occupy a space of about 20 feet by 5 or 6, and in

which it is reported to have been noticed half a century ago. (See Annals of Natural History &c., No. 48; Phytologist, iv. 408).

798. *Verbena officinalis*, vol. ii. p. 233.

The north limit extends to the county of Lancaster, on the west side of England.

799. *Salvia verbenaca*, vol. ii. p. 233.

It will probably be found that the relative length of the calyx and corolla varies considerably in this species, and that the corolla continues to increase in length after expansion from bud to flower, scarcely exceeding the calyx when recently opened, and gradually becoming double that size.

800. *Salvia pratensis*, vol. ii. p. 234.

The late Dr. Bromfield held this species to be "in all probability truly indigenous" in Appuldurcombe Park, in the Isle of Wight. I much fear that the words "in all probability" should here be construed to signify a very slight probability or bare possibility. The facts are, that Dr. Bromfield possessed a single specimen of Salvia pratensis, received from Miss Kilderbee, who believed she had received it fresh along with other wild plants, gathered by a groom in a chalk-pit in the park mentioned; moreover, that Dr. Bromfield himself afterwards sought for the plant without success in the park, which is one of large extent. (Phytol. iii. 658). This may be rather an extreme instance; but if Dr. Bromfield only occasionally gave such wide latitude to the expression "in all probability truly indigenous," it suggests to other botanists the necessity of receiving with some caution those of his records which involve the expression of an opinion or inference, mixed up with the report of a bare fact. Dr. Bromfield's reports of facts, apart from reasoning, were usually careful and reliable. And yet his writings require to be

scrutinized before being trusted; the diffuseness of his language, and the discursiveness of his ideas, often combining to conceal the fallacies of inference, which greater concentration of thought and expression would have rendered obvious to the reader, or might have wholly prevented in the writer. I repeatedly dwell on the degree of trust to be given to individual recorders of localities, and take the opportunity afforded by any special instance much in point, because the credit-worthiness or reliability of the reporter is a very important part in the value of each record. Besides the question of moral confidence in a reporter, there is also to be considered the amount of reliance that can properly be given to his botanical competence, or the exactness of his knowledge of plants and their names. While beyond these two items in the account, there is still another quality in which many a good botanist is greatly deficient; namely, the faculty of reasoning, or the power of drawing sound conclusions from what he observes, and of logically expressing his facts and conclusions in words, so that his readers may know what he truly means, if themselves competent also to read logically, which assuredly is often far from being the case. Indeed, I should not be at all surprised to hear that various botanists deem Dr. Bromfield's opinion, about Salvia pratensis being in all probability truly indigenous in the Isle of Wight, fully warranted by the circumstances stated.

802. *Mentha rotundifolia*, vol. ii. p. 235.

I am indebted to Mr. J. T. Syme for a specimen from the county of Edinburgh, picked at "Inveresk, Musselburgh"; so that the species really grows there, whether indigenous or not. The locality of "Greenfield" is given in Buxton's Botanical Guide to the plants around Manchester; but perhaps that station is within the county

of Derby, if it can be trusted as really belonging to the present species.

803. *Mentha sylvestris*, vol. ii. p. 236.

Mr. Pascoe has seen a specimen, stated to have been picked in Cornwall.

804. *Mentha viridis*, vol. ii. p. 237.

The south limit extends to Cornwall, on authority of Mr. Pascoe's list. Mr. Curnow also reports it from the same county.

807. *Mentha sativa*, vol. ii. p. 239.

It would appear from the remarks of Dr. Bromfield in the Phytologist, vol. iii. p. 657, that this species is no longer found in the Isle of Wight, and likely was not indigenous in its single station. Nor does he give trust to the M. sylvestris, viridis, or piperita, all three on record as having been found in the Isle of Wight. Mr. Syme observed this present species by the side of the Dee, near Kingcausie, seven miles from Aberdeen, in 1847. If the species be accounted indigenous in that station, the county of Kincardine may be substituted for Fife in the north limit.

809. *Mentha Pulegium*, vol. ii. p. 241.

The south limit extends to Cornwall, on authority of Mr. Pascoe's list. Not wild in Scotland. "I am obliged for the correction of the distribution of this plant. I can find no Scottish authority for it. It is not marked in a list kindly given to me by Professor Balfour;"—C. C. Babington, in Bot. Gaz. ii. 9.

810. *Thymus Serpyllum*, vol. ii. p. 242.

This plant is now described under name of T. Chamædrys (Fries) in the Manual of Mr. Babington, on the presumption that our British plant is not the true T. Serpyllum of Linneus. It is somewhat remarkable that Fries indicates the latter as being distributed throughout

Scandinavia, Denmark and Finland included therewith; while the T. Chamædrys is indicated only quite locally in three of his six divisions; namely, in Denmark, Norway, and Gothland. And as both occur in France, though perhaps with their comparative census reversed, there would seem a presumptive probability that T. Serpyllum will be found also in Britain. My solitary example from Iceland belongs to T. Chamædrys, though sent as T. Serpyllum.

811. *Origanum vulgare*, vol. ii. p. 243.

Mr. J. E. Gray brought two specimens of Origanum accidentally among Calamintha sylvatica from the Isle of Wight, and hence probably picked in the locality of the latter, which may be the O. virens. But I doubt whether O. virens is anything more than a pale variety of O. vulgaris.

812. *Calamintha Acinos*, vol. ii. p. 243.

The south limit extends to Cornwall, on authority of Mr. Pascoe.

818. *Teucrium Scorodonia*, vol. ii. p. 247.

Plentiful as this plant is over probably the greater portion of Britain, it would seem to be rather a scarce plant in some of the eastern counties. For instance, I made lists of plants observed last year during a few days of ramble about the towns of Lincoln, Grimsby, Louth, Boston, and Peterborough, and the T. Scorodonia is not mentioned in any of these lists. Nor is it included in a manuscript list of plants observed in the county of Huntingdon by the Rev. W. W. Newbould. Equally absent also from the published lists for Daventry and Banbury. It is indicated as a rare plant in Flora Bedfordiensis. One locality only is mentioned in Flora Cantabrigiensis, and two in Flora Oxoniensis; but no

direct indication of rarity in Cambridgeshire or Oxfordshire, is given in these two latter works. It is reported as common in Leicestershire and West Norfolk, frequent in Hertfordshire.

821. *Teucrium Chamædrys*, vol. ii. p. 248.

Mr. Bicheno's station, mentioned in volume second, proves more to be suspected than he himself allowed. Mr. Borrer writes of it thus: "In Mr. Bicheno's place, shown to me by Mr. Motley, I could find *only one patch* of the plant, intermixed with a white-flowered Origanum of unusual appearance, on the summit of a rocky cliff *near the village*." The italicized letters mark what may be deemed the suspicious view of the locality; but such items in the total fact are too frequently suppressed by botanical "discoverers." Another station lately reported to me, which otherwise seems more reliable than that of Bicheno, unfortunately still has the same isolated and restricted character of a single patch. Mr. Purchas thus describes the station: "I found T. C. on Besborough Common, Gloucestershire, on a rough stony bank, intermixed with Polypodium calcareum; I could see no reason for believing it introduced. I saw but one patch of several yards square." (Letter, Dec. 30, 1850). See under Ajuga Chamæpitys, *infra*, for another station in South Wales. Mr. Babington describes this species as an undoubted native.

823. *Ajuga pyramidalis*, vol. ii. p. 250.

Mr. J. T. Syme estimates the altitude at which he gathered this plant in Orkney to be about 200 yards.

824. *Ajuga Chamæpitys*, vol. ii. p. 251.

The county of Sussex may be erased from the south limit, as Mr. Borrer writes, "I fear that A. C. is as yet undiscovered in Sussex." Mr. Babington finds Teucrium

Chamædrys instead of this plant, in the Pembroke station published in Turner and Dillwyn's Guide, "At St. David's, on the walls and houses."

826. *Leonurus Cardiaca*, vol. ii. p. 252.

Province (9) may be added in the area for this plant, regarded as an introduced one, on faith of the single locality mentioned in Dickinson's Flora of Liverpool. It would be safer also to enclose all the provinces northward of York, as resting mainly on unsatisfactory authorities and indications. How far the Yorkshire stations may be relied upon, I am not able to say.

827. *Lamium Galeobdolon*, vol. ii. p. 253.

Reported to occur in Cornwall, according to Mr. Pascoe's list, but not seen in the county by himself.

829. *Lamium lævigatum*, vol. ii. p. 254.

Perhaps I may have misunderstood Mr. Babington's meaning, in supposing that the habitats of "Fifeshire, Clova" were intended to be given for L. lævigatum: they may be intended for either this or L. maculatum, which are coupled in the Manual, though they immediately follow the name of the former. There is no reason to suppose either of the varieties native about Clova in Forfarshire. I have not seen the station in Fifeshire.

830. *Lamium amplexicaule*, vol. ii. p. 255.

The north limit may be extended to Orkney, on authority of Mr. J. T. Syme.

830*. *Lamium intermedium*, vol. ii. p. 256. (No. 830, b.)

Add Orkney to the north limit, on authority of Mr. J. T. Syme. Apparently also it has been found at the other extremity of Britain, in the Isle of Wight, by Dr. Bromfield, as reported in the Phytologist, vol. iii. p. 665. If this and the other yet dubious English localities prove correct, the formula of distribution will require to be almost re-written, in regard to the area, south limit, census

estimates, range of zones, of latitude, and of temperature.

832. *Galeopsis Ladanum*, vol. ii. p. 258.

Provinces 12 and 13 may be added in the area; that of the Lakes on authority of Mr. Daniel Oliver, who has kindly sent me a specimen from Arnside Knot, on the borders of Westmoreland; that of the West Lowlands, on authority of a note from Mr. J. T. Syme, who found this species between Ayr and Maybole, in 1845. The south limit may be extended to Cornwall, Mr. Pascoe having seen a specimen stated to have been picked in the county.

835. *Galeopsis versicolor*, vol. ii. p. 260.

Mr. Borrer affixes no mark to the name of this species in a list of British plants which he obliged me by checking for the county of Sussex. I have myself seen no specimen in or from any county southward of Norfolk and Northampton; but the authorities for the provinces of Thames and Channel (Sussex only), though few, are too safe to be doubted on that account.

837, b. *Stachys ambigua*, vol. ii. p. 261.

I am favoured with specimens of this variety from Essex by Mr. Varenne, and from Orkney by Syme. I observed it in Northamptonshire last year. Desirous of trying it by reproduction, I have hitherto vainly looked for seeds; all of which appear to wither away while young, or to fall out of the calyces very early.

839. *Stachys germanica*, vol. ii. p. 262.

Provinces (1, 2) may be added in the area, but placed temporarily within the usual enclosure to signify uncertain nativity. Mr. Pascoe has seen a dried specimen, stated to have been picked in Cornwall, which is my only authority for the province of the Peninsula. For the province of Channel there is more direct and special authority. My herbarium has been kindly supplied with a specimen from

Hants by the Rev. W. W. Spicer, who gives me also the following particulars of the station:—"From 70 to 100 plants, in a neglected meadow, on the skirts of a large wood, about a mile and a half north of the Rectory of Itchen Abbas. I have no doubt of its spontaneity, though I cannot find it anywhere else in the neighbourhood." (Letter of December 13, 1850). In reference to this station, Dr. Bromfield remarks that "the plant has a perfectly wild appearance"; but that "until found in other places in the neighbourhood it is better to attach the symbol (†) of doubt to it." I beg my readers to contrast the caution here shown by the late estimable botanist named, against the readiness evinced by the same botanist to admit Salvia pratensis as a native of the Isle of Wight, enlarged upon at page 476. To my apprehension, the evidence here adduced for Stachys germanica far outweighs that before adduced for Salvia pratensis. Yet Dr. Bromfield would seem to hold it equally good for either or both. I consider him rightly and philosophically cautious in the present instance; but of course far from being so in the other case.

840. *Stachys arvensis*, vol. ii. p. 264.

Province 18 may be added in the area, and the north limit may be extended to Orkney, on authority of Miss Boswell and Mr. Anderson, both of whom found this species in Orkney, as I learn from Mr. Syme. But there can be little doubt that it has been introduced to those isles by human agency, with seed-corn or otherwise, and is thus to be regarded only as a colonist there at best.

842. *Nepeta Cataria*, vol. ii. p. 265.

Two stations for this plant are mentioned in Dickinson's Flora of Liverpool; but neither of them, it appears, had been seen by the Author of the Flora, and the desirability of verification is suggested by him. Still, there

would seem an inferential probability for the plant in the province of Mersey, looking to its admitted area in England.

843. *Marrubium vulgare*, vol. ii. p. 266.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

845. *Scutellaria galericulata*, vol. ii. p. 267.

The south limit of this also may be extended to Cornwall, on authority of Mr. Pascoe, by whose kind aid I have been enabled to complete the south limit of so many other species also, which were before unrecorded for Cornwall.

848. *Myosotis repens*, vol. ii. p. 271.

Provinces 1 and 9 may be added in the area; that of the Peninsula on authority of the Rev. W. H. Coleman, who has sent me a specimen from West Somerset; that of the Mersey on authority of the Flora of Liverpool. The south limit may be extended to Devon, perhaps to Cornwall, as Mr. I. W. N. Keys informs us in the Phytologist, vol. iii. p. 1023, that the species is not uncommon in the vicinity of Plymouth. The province of Trent is confirmed by Miss Kirby's useful Flora of Leicestershire. And as the species is stated to be common in that county, with four stations also mentioned for it in Flora Hertfordiensis and Supplement, there would seem a pretty strong presumption that it will occur also in the province of Ouse. While that of North Wales is rendered probable from the occurrence of the plant about Liverpool and Manchester, and in several counties of South Wales. Though I do not as yet find any authority for provinces 4 and 7 among my notes; which, indeed, are not fully brought up so as to include all the existing records for province 4, so many of them being mere repetitions one of another, and thus rendering collation unusually tedious and often quite profitless.

849. *Myosotis cæspitosa*, vol. ii. p. 271.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe; and the north limit traced across Orkney, on authority of Mr. Syme.

851. *Myosotis sylvatica*, vol. ii. p. 273.

The occurrence of this species in the provinces of Peninsula and Channel is not quite satisfactorily shown. According to Flora Devoniensis it is frequent in the county of Devon; and yet it is omitted from all my local lists for portions of that county, as Plymouth, Torquay, Chudleigh, Bideford, Barnstaple. My only second authority for the Peninsula, is a general list of Somerset plants, by Dr. Southby; the name of the species not occurring in three more local lists for sections of this latter county. Nor has the species been observed in the adjacent counties of Wilts or Dorset. Mr. Borrer has intimated that the citation of his name, as an authority for the existence of the plant in Sussex, was an error. There remains only the county of Hants for the Channel province; and here Dr. Bromfield gives one station, on the authority of the Rev. G. E. Smith, connected with a remark about the pubescence of the only example he had seen, which might suggest a possible error. Under these circumstances, it may be safer to exclude province 1 from the area, at least for the present; and to indicate the south limit in "Gloucester, Surrey;—probably Hants, Kent."

853. *Myosotis collina*, vol. ii. p. 274.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

855. *Lithospermum officinale*, vol. ii. p. 275.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

857. *Lithospermum purpureo-cæruleum*, vol. ii. p. 277.

Province 7 is at length confirmed to the real area of this species; Dr. Bidwell having sent specimens to the Botanical Society of London, labelled from a "lime-stone thicket near Denbigh." Perhaps this may intend the original station, "on the top of a bushy hill north of Denbigh," quoted from Ray, but at the same time denied by Griffith, in Turner and Dillwyn's Botanist's Guide. The mention of this plant in the New Botanist's Guide, page 249, must have originated in some misreading of Mr. Bowman's manuscript. The north limit may be carried to Denbighshire. The provincial and comital estimates will become 4 and 5. The range of latitude will be 50—54; and that of temperature 51—48.

Xd. *Symphytum asperrimum*, vol. ii. p. 279.

"Has been found, apparently wild, in a meadow on the left bank of the river Tame, near Bredbury Wood, near Hyde (Mr. J. Sidebotham)": — Buxton's Bot. Guide to Plants around Manchester. Probably another of Mr. Sidebotham's worse than useless records in science, the tendency of which would be to mislead distant botanists; not intentionally so, it may be, but only through the reporter's ignorance of what is required in records for scientific purposes.

861. *Borago officinalis*, vol. ii. p. 280.

Included in Mr. Buxton's book mentioned above, as "an occasional visitant," which may warrant the addition of province (9) to fill up the blank in the series of Nos.

865. *Asperugo procumbens*, vol. ii. p. 282.

Province 17 may be added to the area, on authority of Mr. Borrer and Mr. Syme. The former botanist saw it at Dornoch, Sutherland, in 1808; and the latter found it at Portmahoc, on the Dornoch Firth, in 1842. The north

limit will of course be extended to the county of Sutherland, instead of being traced in those mentioned on page 282 of volume second.

866. *Cynoglossum officinale*, vol. ii. p. 283.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

867. *Cynoglossum sylvaticum*, vol. ii. p. 284.

The counties of Sussex and Kent should be erased from the south limit; Mr. Borrer intimating his fear that this species "was erroneously reported to grow near Tunbridge Wells" (Bot. Gaz. ii. 97). Mr. Varenne has confirmed this plant to Essex, and kindly supplied me with specimens in illustration.

868. *Pulmonaria officinalis*, vol. ii. p. 285.

Mr. Buxton's Guide fills up the vacancy (9) in the provincial area, by a single station in the Manchester circuit. The impropriety of uniting this species and P. angustifolia has been already mentioned in the present volume, page 366; but the following paragraph from the pen of Mr. Borrer, indirectly conveys a very useful suggestion to botanists, on the importance of correctly noting the conditions under which a doubtful native is observed, and I gladly re-copy it here from the Botanical Gazette, vol. ii. p. 97. "I believe the two Pulmonariæ distinct"; writes the careful observer and judicious botanist, "but I never saw a Hampshire, nor a British specimen of P. officinalis. It grows, and has grown time out of mind, far from any existing house or garden, in a wild and thick part of Dane's Wood, near Slindon, Sussex, where it might be supposed a native, although confined to a small space, but for a small patch of Ornithogalum umbellatum, and a few tell-tale brick-bats among the numerous flints that cover the surface there, as in other parts of the wood." Dr. Bromfield subsequently expressed a more qualified opinion

than that referred to in the New Botanist's Guide, vol. ii. p. 569, on the question of identity between P. officinalis and P. angustifolia, and stated in Phytologist, vol. iii. p. 577, that he had never seen "such examples as there would be any difficulty in referring to one or the other." Mr. Babington would seem to have overlooked or disregarded the opinions and investigations of Mr. Borrer and Dr. Bromfield, and treats both species as genuine natives, in the third edition of his Manual, and repeats that P. angustifolia is "scarcely distinguishable as a species" from P. officinalis.

869. *Echium vulgare*, vol. ii. p. 286.

Provinces 9 and 12 may be added in the area; that of Mersey on authority of the Flora of Liverpool; that of Lakes on authority of Mr. D. Oliver, who saw the plant near Scotby in Cumberland.

Xd. *Pinguicula longicaulis*, vol. ii. p. 287.

"The plant of Mr. Woods was an unusually wide-flowered variety of P. vulgaris, which I have seen growing in the same place. Living specimens were exhibited at a meeting of the Linnean Society, when some one present suggested that it might be Gay's species (where published I know not). Hence the error." (Mr. Borrer).

877. *Utricularia minor*, vol. ii. p. 291.

The south limit extends to Cornwall, on authority of Mr. F. P. Pascoe.

879. *Primula elatior*, vol. ii. p. 292.

In the Phytologist, vol. iii. page 703, Mr. Joseph Sidebotham records an experimental sowing of the seeds of this species, and those of P. veris and P. vulgaris, with a view to try their distinctness as species. Among the results detailed by him, is the production of one plant of P. elatior (Jacq.) from the seed of P. veris; also, the production of two plants of P. vulgaris (one caulescent) from

seeds of P. elatior. If the experiments could be confidently relied upon, the conclusion that all three are varieties of one species would be perfectly established; because the result is shortly thus: P. veris = P. elatior, P. elatior = P. vulgaris; and things equal to the same (botanically, producing or produced by the same) are equal to each other. But I at least, for several reasons, do not rely upon these experiments. Firstly, because the published writings of Mr. Sidebotham have impressed me with an unfavourable opinion of his accuracy in matters of science. Secondly, because I have no sufficient confidence in his botanical competence to refer varieties correctly to their species; to do which must be a very necessary qualification in thus experimenting. Thirdly, because moderate experience in such pursuits would enable a botanist to detect likely sources of fallacy or vitiation in the conducting of the experiments, as they are detailed by Mr. Sidebotham himself; and since he does not show that those likely sources of error were known and avoided, his own assertion of the experiments having been conducted "with such precautions that the result might be relied on", will certainly not make that result reliable. I hold the experiments, as reported, to be of no value towards determining the specific identity of P. elatior with either of the other two species. But they may be held to support other results already reached by a more careful process; namely, that certain intermediate forms (whether hybrids of the two, or varieties of either or both) can produce P. veris and P. vulgaris, and can in turn be produced by them. But however strongly this result may point to an identity between P. vulgaris and P. veris as one species, it is not alone sufficient to establish that identity as an absolute fact.

880. *Primula veris*, vol. ii. p. 293.

The south limit extends into Cornwall, on authority of Mr. Pascoe.

882. *Primula scotica*, vol. ii. p. 294.

Mr. Henfrey informs us, in his series of translated extracts and abstracts published under the title of 'The Vegetation of Europe, its Conditions and Causes,' that the Primula scotica occurs "on the highest Scotch mountains," like Draba rupestris, Saxifraga rivularis, &c. This is totally at variance with the facts of their distribution, as set forth in the Cybele Britannica. I leave botanists to choose between the contradictory statements.

883. *Cyclamen hederifolium*, vol. ii. p. 295.

Mr. Borrer says that the Suffolk species was certainly C. hederifolium. Sussex may be added to the counties reported for this plant, if we may rely upon a notice on the cover of the Phytologist for November, 1850, which stated that Mr. W. W. Saunders had found the plant in a new Sussex habitat.

884. *Trientalis europæa*, vol. ii. p. 296.

According to a list of plants kindly checked for me for the town and county of Dumfries, by Mr. Peter Gray, the Trientalis has been reported to occur in that county. I have yet no other than this indirect authority for the province of West Lowlands.

886. *Lysimachia vulgaris*, vol. ii. p. 297.

The south limit may probably be extended to Cornwall; the name of this species being marked in Mr. Pascoe's list, to indicate that the plant has been reported to occur in Cornwall, though not seen in or from that county by himself.

887. *Lysimachia thyrsiflora*, vol. ii. p. 297.

The following extract, kindly sent to me by Mr. T. B.

Flower, as copied from an unprinted "Flora Bathonica" by Sole, shows the artificial origin of one of the two stations for this plant in the vicinity of Bath. "Lysimachia thyrsiflora—I have not yet had the good luck to find this plant; but having had it given me, I have planted it in a low place by the side of the Avon, a hundred paces below Mr. Brett's timber-yard, where it flourishes very well." This station, it seems, would have been published as new and native, in a Flora of Bath, afterwards penned for publication by Mr. John Jelly, who died without having carried his intention into effect. A second locality in the same neighbourhood, but within the county of Wilts, was published in Babington's Flora Bathoniensis as an indigenous one. That second station must now be held of very suspicious origin also; and Mr. Flower thinks the species has lately become quite extinct there. Sole is supposed to have introduced various other plants into the neighbourhood of Bath. In 1845 or 6, Mr. J. T. Syme found L. thyrsiflora near Kingcausie, Kincardine, but it shortly disappeared from the spot.

Xd. *Lysimachia ciliata*, vol. ii. p. 298.

Some other British stations have been lately reported for this American plant. Mr. Benjamin Carrington reports it "naturalized in the neighbourhood of Lincoln." It was shown to Mr. Borrer, by Mr. W. Wilson, "quite naturalized near Warrington, in a spot where a botanic garden once existed." And Mr. John Ball records it as found "on the east bank of Leven Water, about a mile from Dumbarton, growing rather plentifully amongst Carices and Junci with Carum verticillatum." Like the Mimulus luteus and Impatiens fulva, the known transatlantic origin of this species will prevent its being deemed more than a naturalized alien.

Xd. *Lysimachia punctata*, vol. ii. p. 299.

It is somewhat curious that this species should have since been found in the same province, though not in the same spot, in which it had been formerly (as would at present seem erroneously) reported to occur. It was included in Winch's Flora of Northumberland and Durham, as having been found "on the banks of the Skerne, in abundance," first by Mr. Backhouse, and then by Mr. Ward twenty years later. But in an after-printed Appendix to the same Flora, Mr. Winch said that he had examined six of the specimens collected by Mr. Ward, and found them to be all L. vulgaris. Accordingly, L. punctata was again dismissed from the British Flora, fifth edition, into the former edition of which it had been admitted. I also had been favoured with one of Mr. Ward's specimens, which afterwards I found to be L. vulgaris, though first received as L. punctata in my youthful botanical days. Last year, however, Mr. Storey sent me a specimen labelled "Lysimachia vulgaris.—Naturalized in Mr. Sewell's grounds, Heaton Dene near Newcastle." This specimen is clearly L. punctata! On mentioning the fact to Mr. Storey by letter, he informs me that, "The plant under consideration is abundant in the locality referred to, and appears to be perfectly naturalized, growing luxuriantly from year to year. It is, however, quite possible that L. vulgaris may be equally plentiful there." The latter suggestion may be the clue to explain the sort of paradox or cross-errors of name; both species possibly occurring intermingled in each locality. L. punctata may be distinguished by the glandular fringe to the segments of the corolla, by its dotted leaves, and by not having a coloured border to the segments of the calyx such as is seen in L. vulgaris. It is otherwise so similar to the

latter, that it may readily be passed by as not a different species. But it is rather a continental or eastern species, than a western one, and not much likely to be really native in England.

889. *Lysimachia nemorum*, vol. ii. p. 300.

As a fact incidentally bearing on the subject of geographical botany, by showing the affinity between two doubtfully identical species growing in different countries, the following information from Dr. R. J. N. Streeten appears not out of place here. "There is a British specimen of Lysimachia nemorum in my collection", writes Dr. S., "from Newbattle woods, which scarcely differs from your genuine L. azorica with broad sepals."

890, b. *Anagallis cærulea*, vol. ii. p. 301.

The south limit may be extended to Cornwall, on authority of Mr. Pascoe.

892. *Centunculus minimus*, vol. ii. p. 303.

The south limit may be extended to Cornwall, Mr. Pascoe having seen a specimen said to have been picked in that county.

894. *Glaux maritima*, vol. ii. p. 304.

The "general?" area for this plant was indicated interrogatively in volume second, because I had then not any authority for it in the province of Trent. I have since seen it plentifully on the coast of Lincolnshire.

895. *Armeria maritima* (Aut.) vol. ii. p. 304.

Exactly the same note may be applied to the Armeria, as is above applied to the Glaux. There certainly are some differences of size and pubescence sufficient to give an easy physiognomical distinction to the eye between the varieties or sub-species of the A. maritima, usually so-called; but I have not been able to satisfy myself that any clearly expressed distinctions can be drawn out on paper, so as to warrant its severance into three or more

other species. For the characters and localities of the subordinate forms, a reference may be made to Mr. Babington's paper in the Transactions of the Botanical Society of Edinburgh, iii. p. 217.

898. *Statice Bahusiensis* (Fries), vol. ii. p. 307. (S. rariflora.)

Provinces 6 and 9 may be added in the area; that of South Wales on authority of Mr. C. C. Babington, who observed the plant in Pembroke; that of Mersey on authority of Mr. J. T. Syme, who found it at Fleetwood, county of Lancaster. The late Dr. Bromfield wrote that this so-called species "merges by a series of insensible gradations" into S. Limonium. The Isle of Wight may be added in the south limit, on Dr. Bromfield's authority. Probably it occurs also in Essex.

199. *Statice binervosa* (G. E. Smith), vol. ii. p. 307. (S. spathulata.)

This appears under two names, as a divided species, in the third edition of Babington's Manual, S. Dodartii (Gir.) and S. occidentalis (Lloyd). Possibly we have two species; though if so, I am not yet prepared to separate their stations satisfactorily. The name of S. spathulata (Desf.) so long applied to this one or two species in England, is now said to belong properly to a different and non-British species. In Dickinson's Flora of Liverpool, it is stated that the present plant is now not to be found on Hilbre island, on the coast of Cheshire; a station which was my only one for the province of Mersey. The station as originally given to me, with a specimen still in my possession, was "Hilbury Island (J. Forbes, Esq.), W. Brand." The letter "J." was perhaps a mistake for "E."; and I placed the locality under 'Cheshire' in the Supplement to the New Botanist's Guide, on the supposition that Hilbre island was intended. The intermediate Cheshire

coast would seem very likely to produce a plant which is certainly found in Anglesea and Caernarvon, in Cumberland and Wigton.

900. *Statice caspia*, vol. ii. p. 308.

In the line of area No. [2] should have been No. [3], as it stands for the county of Kent, in the province of Thames, afterwards enumerated for this species, although as an erroneous record. On the coast of Lincolnshire I saw S. Limonium in great plenty, often very diminutive, but no example of S. caspia or S. binervosa. The change of name is explained in the British Flora, editions 5 and 6.

902. *Plantago media*, vol. ii. p. 309.

Province 9 may be added in the area. I saw this species sparingly near Chester in 1850; and two stations are mentioned for it in Buxton's Manchester Plants. Mr. Syme found P. lanceolata very common in Orkney, but saw no example of P. media, which confirms the suggestion that Lowe's list intended the species P. lanceolata under name 'P. media.'

903. *Plantago lanceolata*, vol. ii. p. 310.

Add Orkney to the north limit, on authority of Mr. Syme, as above mentioned.

904. *Plantago maritima*, vol. ii. p. 311.

The provincial generality may be now given with confidence; the blank for the Trent having been filled up by my own quest for the plant on the coast of Lincoln in 1851, where it is plentiful enough. It attains to the inferarctic zone on Ben Nevis, at a height of probably 600 yards, and in a mean temperature as low as 40. I should suppose also the same or greater elevation in Strath Affaric, judging by the observation of Mr. John Ball, that it extends upwards to the "alpine" region.

Xd. *Plantago Psyllium*, vol. ii. p. 312.

This species, or a near ally, appears to have been found

in the Isle of Wight in 1843, and to have since again disappeared. (See Phytologist, iii. p. 745.)

906. *Littorella lacustris*, vol. ii. p. 312.

Perhaps ascends 200 yards higher in the East Highlands, than was indicated for it in volume second.

908. *Chenopodium olidum*, vol. ii. p. 314.

The south limit may be extended to Cornwall; Mr. Pascoe having seen a dried specimen of this species, stated to have been picked in Cornwall.

910. *Chenopodium urbicum*, vol. ii. p. 315.

The occurrence of this species in Scotland is unsatisfactorily testified; and perhaps it would be better to consider Durham and Chester as the most northern counties certainly known to produce C. urbicum.

911. *Chenopodium rubrum*, vol. ii. p. 316.

The term 'Inundatal' may be added to that of 'Viatical', to express its places of growth.

911*. *Chenopodium botryoides*, vol. ii. p. 316.

Of this species I have seen specimens from Norfolk only. It occurs also in Suffolk, and possibly in Essex. The other recorded counties are all erroneous, I fear; that is, if the plant found about Yarmouth in Norfolk be the true species, and which in general appearance resembles C. urbicum rather than C. rubrum. But a small form of the C. rubrum, that grows on the coast and on the sides of muddy ponds, is occasionally mistaken for C. botryoides. In restricting the known area of this latter to the counties of Suffolk and Norfolk, with the possible addition of Essex, considerable change would require to be made in the formula of distribution. The provincial and comital estimates will be taken at 2 and 3. The range of latitude will be contracted to 52 (or 51)—53; and that of temperature to 50—49.

912. *Chenopodium murale*, vol. ii. p. 317.

The province of North Wales should be enclosed [7] as too uncertain for reliance at present, though not improbable. I have seen specimens in or from the counties of Hants, Kent, Surrey, and Gloucester only.

913. *Chenopodium hybridum*, vol. ii. p. 318.

This is confirmed to the province of the Peninsula, by the name being marked in a list of plants observed in the neighbourhood of Dunster in West Somerset, by the Rev. W. H. Coleman. The alleged locality for it in the neighbourhood of Bath, mentioned on page 318 of volume second, has been unproductive of it for several years past, as I learn from Mr. Withers.

914. *Chenopodium album*, vol. ii. p. 318.

Probably Orkney may be substituted for Sutherland in indicating the north limit. Mr. Syme saw the plant at Swanbister, but only as a garden weed, so that it may have been recently introduced to Orkney.

915. *Chenopodium ficifolium*, vol. ii. p. 319.

The county of Hants must be excluded from the south limit, having hitherto rested on the authority of Mr. Notcutt's list of plants near Fareham, in which this was included by mistake, according to the report of Dr. Bromfield in Phytologist, iii. 750. Mr. Varenne deems this plant not so rare as would appear by the records; it being with difficulty distinguished from C. album while in flower after the lower fig-form leaves have been lost.

916. *Chenopodium glaucum*, vol. ii. p. 320.

The county of Sussex is to be excluded from the south limit, as I am informed by Mr. Borrer, that the Rev. G. E. Smith had inadvertently marked the name of this species in his list of Sussex plants. Mr. Syme having found it in Fifeshire, that province (15) may be added to

the area, although under enclosure as a doubtfully indigenous habitat.

Xd. *Atriplex nitens*, vol. ii. p. 322.

Dr. Bromfield who at first appeared to suppose this species truly wild, subsequently became satisfied that it had been introduced by cultivation into the Isle of Wight. (See Phytologist, vol. iii. p. 755.)

920. *Atriplex laciniata* (Eng. Bot.), vol. ii. p. 323. ("A. arenaria.")

In so far as the Atriplex laciniata of English botanists is synonymous with the A. arenaria (Woods) of Babington's Manual, third edition, I have seen examples only from the coasts of Essex, Ayr, and probably Sutherland; that from the last being very young, not even showing flowers. The distribution of "A. laciniata," as sketched from records, on page 323 of volume second, belongs rather to the plant considered A. rosea by Mr. Babington, and re-named A. Babingtonii by Mr. Woods; but it will require to be extended by uniting with it also the distribution of A. rosea or Babingtonii, as given on the same page.

921. *Atriplex rosea*, vol. ii. p. 323. ("A. Babingtonii.")

By uniting together the localities on record for this plant and the usually so-called A. laciniata, but excluding the few stations that are known or supposed to belong to A. arenaria, we shall have for this species an area that may be designated "general" with great probability of truth. Its north limit will also include Orkney, confirmed for A. Babingtonii by Mr. J. T. Syme, and probably intended for the same plant, under name of A. laciniata, by Dr. P. Neill. The provincial estimate of course will become 18, if general.

922. *Atriplex hastata*, vol. ii. p. 324. (A. patula.)

It is now generally believed that the name of 'Atriplex

patula' was misapplied by Smith, and subsequently by all or almost all English authors, treating of English plants, until a very recent date. Transferring the name of 'patula' to the Atriplex angustifolia of Smith, in conformity with the usage of continental botanists, it becomes a question, what other name we are to adopt for the common English plant, hitherto so usually designated 'A. patula,' and figured as such in English Botany? In his third edition Mr. Babington has returned to that of hastata, rightly used by Hudson in the Flora Anglica; but he still separates the A. hastata into two species [not into four, as in the second edition of the Manual] under names of 'deltoidea' and 'hastata.' These two supposed species of the Manual seem to correspond with the A. latifolia and A. hastata of Koch's Synopsis, second edition; but the correspondence is only in the aggregate or collective plant, for we cannot unite them by pairs so as to say that A. hastata (Bab.) = A. hastata (Koch), or that A. deltoidea (Bab.) = A. latifolia (Koch). One or other of the two authors must have misunderstood the two species, if two there be, which is not improbable.

923. *Atriplex patula* (vera), vol. ii. p. 325. (322, b. A. angustifolia.)

Atriplex angustifolia and Atriplex erecta, the plants so labelled by most English botanists, may be taken in combination to make the A. patula of the continental botanists. The figure of A. erecta in English Botany, plate 2223, represents an irregular growth, and cannot be assigned very satisfactorily to either of the two common species; but it may perhaps belong to A. patula rather than to A. hastata. Be this as it may, almost all the examples that I have seen labelled "A. erecta" by English botanists, appeared to me to belong to A. angustifolia, and to be scarcely distinguishable therefrom, even as

varieties simply, by their more dentate leaves; the few exceptions being obvious errors of name, the specimens properly belonging to A. Babingtonii or to Chenopodium album. Thus, Atriplex erecta may be struck out of volume second; its distribution there given being merged under that of A. patula (angustifolia). The north limit of the latter includes Orkney, on authority of Mr. Syme. Much error and confusion may arise through this transfer of the name 'patula' from one species (hastata) to another (angustifolia); and it may be better either to use the synonym of A. angustifolia in local lists, or to add some explanation such as may render it clear to readers whether the name of 'patula' intends the species 'hastata' or the species 'angustifolia.'

927. *Schoberia maritima*, vol. ii. p. 329.

The north limit may be traced across Orkney, on authority of Mr. J. T. Syme.

929. *Salicornia herbacea*, vol. ii. p. 330.

The north limit of this plant also may be traced into Orkney, on the authority of Mr. J. T. Syme.

930. *Salicornia radicans*, vol. ii. p. 331.

It will be safer to exclude the province of Peninsula [1] from the area of this species, while it rests on the unconfirmed authority of Sole.

932. *Polygonum viviparum*, vol. ii. p. 333.

Orkney may be indicated in the north limit for this species, on authority of Mr. J. T. Syme.

936. *Polygonum mite*, vol. ii. p. 335.

Perhaps the provinces of the Peninsula and Channel should be added to the area; although they remain at present too uncertainly recorded for unhesitating reliance. Mr. Pascoe marks the name of this species as one reported to occur in Cornwall, though not observed in that county by himself. In Phytologist, iii. p. 762,

Dr. Bromfield intimates that it may likely exist in the Isle of Wight. The counties of Surrey, Middlesex, Cambridge, Huntingdon, and Northampton, may be deemed certain. Those of Glamorgan and York, in addition to the two before mentioned, are probable, but not certain.

938. *Polygonum minus*, vol. ii. p. 337.

A second Scottish county, that of Kirkcudbright, may be added to the north limit, on authority of Mr. Peter Gray.

940*. *Polygonum Raii*, vol. ii. p. 338.

Province 9 may be added in the area. To the counties already enumerated in volume second for this species I am only enabled to add that of Cardigan, recorded on the authority of Mr. C. C. Babington, and that of Lancaster, on authority of Dr. Dickinson's Flora of Liverpool. The latter will add province 9 to the ascertained area. Dumbarton has been reported to me for P. maritimum, more probably P. Raii being the species intended.

940. *Polygonum maritimum*, vol. ii. p. 339.

This species would appear to have become extinct on the coast of Hants, or else to have been erroneously recorded as found there. I am not prepared to establish the idea as a positive fact; but I do fear that the Hants plant was P. Raii, not true P. maritimum.

942. *Polygonum dumetorum*, vol. ii. p. 340.

Mr. Babington has favoured me with a specimen of this species from Somerset. Dr. Bromfield has added the county of Hants to the few others on record. The ascertained provincial and comital census is expressed by 3 and 5; but how far the estimate should exceed those Nos., it may be difficult at present to say.

943. *Rumex Hydrolapathum*, vol. ii. p. 342.

I am at a loss to say whether the following passage

from the pen of Dr. Balfour, printed in Phytologist, ii. p. 308, should be deemed sufficient authority for the addition of the province of East Highlands to the true area, and the county of Perth to the indication of north limit for this species: "Mr. Stewart Murray observed the plant in ditches near Mickleour in Perthshire," writes Prof. Balfour, "and I have a specimen from the station, picked by Mr. Gorrie. Hopkirk mentions the plant as growing near Old Kilpatrick on the Clyde, but I have not been able to see it in that locality." Did the Professor intend us to understand that he had not been able to seek the plant near Old Kilpatrick? — or, that he had sought it there, and had not been able to find it? His residence (Glasgow) for some time near the habitat mentioned by Hopkirk, may incline us to the latter reading, although the words might be taken in either sense. The Rev. W. W. Newbould supplies the deficiency of my memorandum respecting Rumex maximus, mentioned on page 342 of volume second, by a reference to the first edition of Babington's Manual of British Botany. When I had occasion to look into the Manual while writing the second volume of the Cybele, I consulted the second edition of Mr. Babington's work, where R. maximus is not alluded to.

944*. *Rumex aquaticus*, vol. ii. p. 343.

The north limit may be traced across Orkney, on authority of Mr. Syme, who finds both this species and R. crispus there. The Rev. W. T. Bree states in Phytologist, iv. 102, that Rumex aquaticus is plentiful by the sides of ditches in the Whittlesea fens; but very likely it was R. Hydrolapathum that was seen there. I am indebted to Dr. Walker Arnott for a specimen of Rumex from Scotland, which is probably the R. conspersus of Hartmann, much resembling R. pratensis, but with a

larger and more rounded perianth; and which, in general appearance, might be placed between R. aquaticus and R. obtusifolius.

949. *Rumex pulcher*, vol. ii. p. 347.

The county of Lincoln may be indicated in the north limit of this species, as I observed it by the road-side between Lincoln and Bracebridge last autumn.

950. *Rumex maritimus*, *R. palustris*, vol. ii. p. 347.

I am still unprepared to separate correctly the localities on record for these plants. R. maritimus is probably the more frequent and more widely distributed plant. The provinces numbered in the line of area may be taken as those in which R. maritimus has been recorded, whether rightly or wrongly. And by omitting provinces 13 and 18, the same Nos. will show the provinces on record for R. palustris. Mr. C. C. Babington seems inclined to add a third species, closely allied to these two, under name of R. limosus; for which, see Bot. Gaz. i. 296.

957. *Thesium Linophyllum*, vol. ii. p. 353.

The county of Essex may be added to those enumerated in the second volume, Mr. G. S. Gibson finding the plant at Chesterford and Heydon.

958. *Asarum europæum*, vol. ii. p. 354.

There is some probability that this plant may be a true native of Wiltshire. Mr. T. B. Flower informs me that in Sole's MS. Flora, dated 1782, it is mentioned as growing "in the Duke of Queenborough's woods, near Amesbury." And "one large patch of it was found by Mr. Popham, about the year 1820, away from any house, in the left hand hedge of the lane, going from Standlynch Down, to the large chalk-pit at Redlynch, near Salisbury." In August, 1850, Dr. Bromfield wrote to me thus; "Mr. Borrer thinks the Wiltshire station for Asarum a good and natural one. The station is very

elevated, on chalky marl amongst brushwood, on a steep bank, not on an artificial hedge-bank." Mr. Flower has obligingly sent me a specimen from this station, and I understand his opinion to incline in the same way as that of Mr. Borrer. Unless there are two stations, however, there is a strange contradiction in the reports, respecting the "hedge" and "bank."

960. *Empetrum nigrum*, vol. ii. p. 355.

Province 1 may be added to the area; Mr. Robert Withers having given me a specimen picked near Dunkery Beacon, Somerset, at about 500 yards of elevation. The station for this shrub in Sussex, as I am informed by Mr. Borrer, was very little above the tidal level in the adjacent river Arun; but only two plants of it were found there by himself, the drainage of the bog apparently having gradually and at length wholly destroyed it in Sussex. Originally, it must have descended quite into the inferagrarian zone.

962. *Euphorbia Helioscopia*, vol. ii. p. 356.

The north limit may be traced across Orkney, on authority of Mr. J. T. Syme.

963*. *Euphorbia stricta* (Koch), vol. ii. p. 358.

This extends into a second county, that of Gloucester, in the same province of Severn. See Mr. Hort's description of the Gloucestershire locality, in the Botanical Gazette, ii. 194, and iii. 17.

965. *Euphorbia pilosa*, vol. ii. p. 359.

This has been again reported from Sussex, by Mr. George Maw, and as occurring in a different locality; namely, on the left-hand of the London road, about a mile and half from Battle. But Mr. Borrer has since corrected this second report, by informing us that the plant found by Mr. Maw was really E. platyphyllos. (See Bot. Gaz. i. 307 and iii. 98).

966. *Euphorbia coralloides*, vol. ii. p. 360.

"It is a mistake that Euphorbia coralloides was first recorded at Slinfold as E. Esula. The true E. Esula grew there also, introduced, no doubt, and was taken thence for the 'English Botany' figure. I believe it has since been rooted out in improving the Parsonage grounds." (Mr. Borrer, in Bot. Gaz. ii. 98).

967. *Euphorbia Esula*, vol. ii. p. 360.

I am afraid that this species has been incorrectly advanced into the category of natives. The station at Birgham Haugh, in Berwickshire, where it was reported to occur wild, turns out to be the site of a former garden or shrubbery. (See Reports of the Berwickshire Naturalists' Club, i. 182). The other localities seem all liable to suspicion.

968. *Euphorbia Cyparissias*, vol. ii. p. 361.

Provinces (1 2) may be added to the area of this very probably introduced species; Mr. Pascoe marking it as a distrusted native of Cornwall; and Dr. Bromfield enumerating it as a species certainly introduced to the Isle of Wight.

970. *Euphorbia portlandica*, vol. ii. p. 362.

Erase the county of Sussex from the south limit. Mr. Borrer says that it "was never found in Sussex; at least, it never could grow in the salt-marsh situation (an islet in the estuary of the Lavant) assigned to it, on doubtful recollection, by Mr. Smith." (Bot. Gaz. ii. 98).

973. *Euphorbia Lathyris*, vol. ii. p. 364.

Mr. C. C. Babington remarks on this species, in the Botanical Gazette, ii. p. 9,—"I think that the station for this plant at Warley, near Bath, is an indigenous one. It is a very steep wood facing the south-west, and in a very warm situation." The difficulty of believing this a native

of Britain, lies in the two circumstances, of its not flowering usually till the second summer in our gardens, and of its being frequently damaged by frost in winter. A "steep wood" might afford that combination of dryness and shelter which would tend much to preserve a biennial plant from the injurious effects of winter frost, and it might thus present a suitable situation for the natural growth of a species, even where the climate of the open country surrounding it would be too severe for the regular and continued reproduction of the same species. On the whole, however, the evidence is but slight in favour of the aboriginal nativity of this species in Britain; most of its recorded stations being confessedly suspicious.

976. *Mercurialis perennis*, vol. ii. p. 367.

Miss Boswell has found this plant in Orkney, which may warrant the indication of a "general" area for it, although I am not able to adduce any other authority for its occurrence northward of Ross,

Xd. *Cannabis sativa*, vol. ii. p. 372.

The Rev. W. W. Newbould supplies the omission in volume second, by a reference to 'Babington's Primitiæ Floræ Sarnicæ.'

984. *Ulmus montana*, vol. ii. p. 373.

The south limit extends into Cornwall, on authority of Mr. Pascoe's list.

985. *Ulmus suberosa*, vol. ii. p. 374.

According to Mr. Pascoe's list, this species also has been reported to occur in Cornwall, although not observed in the county by that botanist himself.

989. *Fagus sylvatica*, vol. ii. p. 377.

The south limit of this tree extends into Cornwall, on authority of Mr. Pascoe's list.

990. *Carpinus Betulus*, vol. ii. p. 378.

Dr. Bromfield was unprepared to cite any good station

for this tree in the county of Hants; but he remarks (Phytologist, iii, 885) that it "abounds in some parts of Sussex."

991. *Corylus Avellana*, vol. ii. p. 379.

The question respecting its nativity in the Hebrides, would seem to be satisfactorily answered in the affirmative, by a Report of proceedings at a meeting of the Botanical Society of Edinburgh (Phytol. iv. 523), in which Mr. Macphail is said to have found some hazel-nuts in a large moss drain in the island of Lewis, at a depth of nine feet from the surface, where, we are informed, "there is no native hazel to be seen now in the locality, except one small bush, which is cut down by the natives whenever it ventures to push out a sprout, striving for existence in the summer."

992. *Alnus glutinosa*, vol. ii. p. 380.

By some error the word 'Midagrarian' has been substituted for 'Superagrarian,' in giving the zonal range of this shrub or tree; though the observation in the text underneath the usual formula, would show that indication to be an erroneously restricted one.

994. *Betula nana*, vol. ii. p. 381.

In the third edition of Babington's Manual, the fancy about two species of Dwarf Birch in Britain, is tacitly abandoned, and nothing is there said about the supposed B. intermedia.

995. *Populus alba*, vol. ii. p. 382.

In Phytologist, iii. p. 841, Dr. Bromfield has penned some good remarks, historical and critical, on this tree. My belief is, that the names are frequently crossed, and that the localities and reported distribution of neither of the alleged species can be relied upon, if taken apart from those of the other. The tree found in the south of

England, which I have referred to P. alba, on account of its four (purplish ?) stigmas, has ordinarily the more rounded and less hoary leaves of P. canescens; although its leaves produced on the suckers and vigorous sap-shoots, are angularly lobed and very white underneath. It is called the 'Abele' by farmers and other country people in Surrey. I should recommend botanical statists, who may find occasion to estimate the area and census of these trees from existing data, to take them in combination as one aggregate species.

996. *Populus canescens*, vol. ii. p. 383.

Province 6 may be added in the area, on authority of Mr. Babington, who marks this tree as seen in Pembrokeshire. The Isle of Wight may be indicated in the south limit, on authority of Dr. Bromfield, in the Phytologist, as above referred to.

999. *Salix pentandra*, vol. ii. p. 387.

Mr. Pascoe marks this as seen by himself within five miles of Trewhiddle in Cornwall.

1000. *Salix cuspidata*, vol. ii. p. 388.

This has not been found in Westmoreland, according to a note from Mr. Borrer. Male specimens of S. pentandra were mistaken for it in that county. Dr. Andersson intimates that it is not the S. cuspidata of the German botanists, but that it corresponds with Lapland forms of S. pentandra and tetrandra.

1001*. *Salix Russelliana, &c.*, vol. ii. p. 388.

It would appear from the notes by Dr. Andersson, above referred to, that S. Russelliana of English botanists is made up from mixed specimens, partly those of S. fragilis, partly those of S. viridis. Perhaps true S. Russelliana (Sm.) may be S. viridis (Fries).

1006. *Salix rubra*, vol. ii. p. 392.

Add province 5 in the area, on authority of Mr. Borrer,

who thus named a Herefordshire Salix found by Mr. W. H. Purchas.

1007. *Salix viminalis*, vol. ii. p. 392.

Extend the south limit into Cornwall, on the authority of Mr. Pascoe.

1008. *Salix Smithiana*, vol. ii. p. 393.

Dr. Bromfield quotes Dr. Salter, for the existence of this species in the Isle of Wight.

Xd. *Salix holosericea*, vol. ii. p. 394.

"I believe our 'S. holosericea' not Willdenow's plant. It is more common than S. acuminata of Smith, in the South, at least." (Mr. Borrer).

1009. *Salix acuminata*, vol. ii. p. 394.

Dr. Bromfield quotes Dr. Salter and Miss Kilderbee, in addition to himself, for the occurrence of this species also in the Isle of Wight. But Mr. Borrer writes, "I am not sure that I ever saw this except in cultivation." Probably S. acuminata of several British collectors is identical with S. Smithiana; while the S. acuminata of Leefe's 'Salictum,' No. 37, is stated by Andersson to be S. dasyclados (if I read the name aright) of Wimmer.

1011. *Salix aurita*, vol. ii. p. 395.

The south limit extends into Cornwall, on authority of Mr. Pascoe.

1013. *Salix nigricans*, vol. ii. p. 397.

Mr. Borrer is quite persuaded that none of the varieties grouped under the general name of S. nigricans "is either native or denizen of the first six (or nine) provinces."

1014. *Salix hastata*, vol. ii. p. 397.

Probably this ought to be expunged altogether from our list of British Willows. See the last editions of the British Flora and Manual of British Botany.

1015. *Salix bicolor*, vol. ii. p. 398.

Mr. Borrer makes the same comment on this species,

or group of species, as is quoted above under S. nigricans. According to Dr. Andersson many of the alleged species grouped under this name and number in the 'London Catalogue of British Plants,' should be referred to the S. phylicifolia of Linneus; and the same opinion is acted upon in the last editions of the British Flora and Manual; where, however, some of the forms are still kept apart from S. bicolor under the name of S. laurina.

1018. *Salix angustifolia*, vol. ii. p. 400.

To be expunged from our list of native Willows. Mr. Borrer says, "I never saw a British specimen of S. angustifolia." Though Hooker and Arnott and Babington still retain it in their works, this does not appear to be done on any certain or eye-sight knowledge of its existence in Britain.

1019. *Salix rosmarinifolia*, vol. ii. p. 401.

This also may be expunged. Mr. Borrer writes, "I never saw any but American specimens of S. rosmarinifolia."

1036. *Neottia Nidus-avis*, vol. ii. p. 414.

The south limit extends into Cornwall, on faith of a single dried specimen shown to Mr. Pascoe, as having been picked near Falmouth, in that county. The mean temperature may thus rise to 52.

1037. *Listera cordata*, vol. ii. p. 415.

The fir-plantation at Langwith, where this plant occurs, "is quite in a low part of the central vale of York," according to a note from Mr. J. G. Baker.

1038. *Listera ovata*, vol. ii. p. 416.

The south limit may be extended into Cornwall, on the authority of Mr. Pascoe.

1039. *Epipactis latifolia*, vol. ii. p. 417.

The south limit may be extended into Cornwall; Mr.

Pascoe having seen a dried specimen that had been picked in the county.

1042. *Epipactis ensifolia*, vol. ii. p. 420.

In reference to the remark about different observers having assigned the localities of Methven Wood to different species, the Rev. W. W. Newbould says, "At Goodwood E. ensifolia and E. grandiflora grow together: is it so at Methven?" The query merits a reply by some visitor of the station.

1045. *Orchis Morio*, vol. ii. p. 422.

The south limit may be extended into Cornwall, on authority of Mr. Pascoe. According to Hooker's Flora Scotica, this species is "frequent" in Scotland; but that indication was perhaps only copied without acknowledgment from Lightfoot's Flora Scotica; and if so, it is of course no second or confirmatory authority in support of Lightfoot himself.

1049, b. *Orchis fusca*, vol. ii. p. 424.

The Province of Channel [2] and county of Sussex may be excluded for the present. See Bot. Gaz. ii. p. 98. Mr. Carrington reports (Bot. Soc. Edinb.) this species as having been found near Lincoln; a habitat which will require confirmation.

1050. *Orchis hircina*, vol. ii. p. 425.

It would seem by recent reports that this species may still be found very sparingly in Kent, "in the neighbourhood of the old station mentioned in Sowerby's English Botany" (Mr. Wollaston, in Phytol. iv. 169); and that it has also occurred in the parish of Great Glemham, near Saxmundham in Suffolk (Mr. Bloomfield, in Bot. Gaz. i. 327 and Phytol. iii. 942). The latter locality adds the province of Ouse to the area, if it can be relied upon.

1051. *Orchis pyramidalis*, vol. ii. p. 426.

Province 9 may be added in the area, on authority of

Dickinson's Flora of Liverpool. Reported to occur in Cornwall, according to Mr. Pascoe, but not observed in that county by himself. Dr. Arnott writes me, in November, 1849, "I am very doubtful as to the Fife station of Orchis pyramidalis. In Galloway, it grows in pure sea sand with Psamma arenaria and Convolvulus Soldanella; probably a ballast hill, as it is close to a small harbour where vessels discharge—I can scarcely say what, for there are no houses near." The stations near Liverpool, Cheshire side of river, are reported on the sands of the coast, which are doubtless mingled with shells, and thus may contain lime enough for a plant which seems to require lime.

1053. *Orchis maculata*, vol. ii. p. 428.

Add Orkney to the north limit, on the authority of Mr. J. T. Syme.

1055. *Habenaria bifolia* and *chlorantha*, vol. ii. p. 429.

Province 15 may be added in the separate area for each of these, as indicated on page 430 of volume second. H. bifolia may be considered usually the ericetal plant, and H. chlorantha the sylvestral.

1057. *Habenaria albida*, vol. ii. p. 431.

This "has indubitably occurred in one locality in Sussex," according to Dr. Bromfield, referring to Jenner's Flora of Tunbridge Wells, p. 45. I suspect that Merrett's Northampton plant is incorrectly referred to this species in Turner and Dillwyn's Botanist's Guide, Herminium Monorchis having been originally intended. Near the end of the remarks under this species in volume second, a mistranscript occurs, East *High*land being printed instead of East *Low*land province.

1058. *Aceras anthropophora*, vol. ii. p. 431.

Province 2 may be added in the area, on authority of Mr. Woods, who has found this plant in Sussex.

1060. *Ophrys apifera*, vol. ii. p. 433.

Mr. Pascoe has seen a dried specimen that was said to have been picked in Cornwall. This habitat brings the type of distribution still nearer to the English. I was indebted to the Rev. W. R. Crotch for the inspection of a curious monstrosity in the flowers of this species, found by a lady on Steep Holms islet, Somerset; in which the column is double, an inner small one to represent the pistillum, and an outer petaloid one (very like the true petals) with anther-pouches near the base of the margins.

1061. *Ophrys aranifera* and *fucifera*, vol. ii. p. 434.

Erase or enclose the province of Peninsula [1]; Mr. R. Withers and other botanists having vainly searched for this species in the neighbourhood of Bath. The Isle of Wight may be indicated in the south limit, on authority of Dr. Bromfield, who remarks that O. fucifera is the only form found in the isle. The provincial estimate may be reduced to 4.

1065. *Cypripedium Calceolus*, vol. ii. p. 438.

Mr. Borrer saw this in Yorkshire (one plant) and in Durham, in 1844. And in June, 1847, four plants of it were seen by some members of the 'Tyneside Naturalists' Field Club' (Trans. vol. i. p. 212). I am indebted to Mr. Story for a specimen picked by Mr. N. Usher, in Castle Eden Dene, Durham, in 1842.

1073. *Narcissus Pseudo-Narcissus*, vol. ii. p. 445.

The south limit extends into Cornwall, on authority of Mr. Pascoe. Perhaps the term 'sylvestral' may be also properly indicated for the places of growth of this plant.

Xd. *Narcissus incomparabilis*, vol. ii. p. 446.

Has been found in Worcestershire, and supposed to be wild in one spot there, according to a record made by Mr. John Roby, in Phytologist, iii. p. 921.

1081. *Allium arenarium*, vol. ii. p. 452.

"By Allium 'arenarium' (Linn.) Fries means our A. vineale (Nov. Suec. p. 84)." Mr. Borrer, in Bot. Gaz. ii. p. 99. (See also Bot. Gaz. ii. p. 9).

1083. *Allium vineale*, vol. ii. p. 454.

Add province 9 in the area, on authority of Mr. J. Harrison, quoted in Dickinson's Flora of Liverpool. The south limit extends to Cornwall, on authority of Mr. Pascoe.

1084. *Allium sphærocephalum*, vol. ii. p. 454.

Erase "1 or" from the area, and "Somerset or" from the south limit; Mr. Borrer informing me that the station is on the Gloucestershire side of the Avon.

1094. *Muscari racemosum*, vol. ii. p. 461.

"I am fully persuaded Muscari racemosum is a genuine native of the East of England." Dr. Bromfield, in Phytologist, iii. p. 967, with more extended remarks on the claims of the plant to be so considered.

1095. *Anthericum serotinum*, vol. ii. p. 461.

Still to be found on Clogwyn ddu, or Clogwyn dur Arddu, a precipice of Snowdon, probably upwards of 800 yards above the sea. The Rev. T. Butler sent specimens thence to the Botanical Society of London. I do not know the exact situation of Mr. John Ball's station "on rocks above the copper-mine near Llyndd," mentioned in Bot. Gaz. iii. p. 69.

1098. *Convallaria bifolia*, vol. ii. p. 465.

"I have seen it at Caen Wood, in a part of the park said never to have been cleared from the aboriginal forest, but only in one very large patch. Another patch had been destroyed (or was, at least, not to be found when I was there) by the recent leading of a made walk through it, as the gardener told me." Mr. Borrer, in Bot. Gaz. ii. p. 99. (See also Bot. Gaz. i. p. 319).

1099. *Convallaria majalis*, vol. ii. p. 467.

Province 13 may perhaps be admitted in the true area, as we are told by Mr. Peter Gray, in Phytologist, iii. p. 740, that C. majalis was found by the Rev. James Fraser, "to all appearance indigenous", in a wood between Colvend and the village of Dalbeattie, in the parish of Urr, Kirkcudbrightshire. On the authority of Dr. Bromfield, the county of Hants should be indicated in the south limit.

1100. *Convallaria verticillata*, vol. ii. p. 468.

Mr. Peter Gray marks this species as one that has been reported to occur in the county of Dumfries; I do not know on whose authority the report rests.

1102. *Convallaria Polygonatum*, vol. ii. p. 469.

The province of Channel [2] and county of Hants appear too uncertain for reliance. On which, see the remarks by Dr. Bromfield, in Phytologist, iii. p. 960. Perhaps the province of Thames should also be held unascertained at present; the provincial estimate being reduced to 6 or 5.

1105. *Colchicum autumnale*, vol. ii. p. 471.

Province 6 may be added in the area, on authority of Mr. Babington's list of plants seen in Pembrokeshire.

1107. *Hydrocharis Morsus-ranæ*, vol. ii. p. 473.

Province 7 may be added in the area; as the plant grows in small pits near Chester, on ground that formerly was part of the old estuary or channel of the Dee river, before the new cut was made. I cannot certainly say whether the station is on the Flintshire or Cheshire side of the now invisible boundary line between the two counties, and two provinces 7 and 9, but suppose it within Flint.

1108*. *Anacharis Alsinastrum*, vol. ii. p. 474.

Additional stations continue to be recorded for this

plant. Provinces [3] and 10, and counties of Surrey (error ?), Cambridge (introduced), Lincoln, and Derby, may be added to those mentioned in volume second. The station of Duddingston Loch was an error, the specimens at first supposed to have been brought thence to Professor Balfour by a student, having more probably been brought by accident from a pond in the Botanic Garden at Edinburgh. On the whole, notwithstanding the many localities, and great abundance of the plant in its stations, the presumption of its being an introduced alien has become strengthened. (See Botanical Gazette, vol. iii. pp. 79, 135, 138).

1109. *Alisma Plantago*, vol. ii. p. 475.

This is mentioned in a list of plants seen in Orkney by Miss Boswell; and if there is no mistake in the matter, the area, north limit, range of latitude and of temperature, all will require to be extended in accordance. I prefer, however, to await confirmation; as the plant is a very conspicuous one, and does not appear to have been noticed in Orkney by Lowe, Neill, Gillies, Duguid, or Syme. The remarks under A. ranunculoides, page 476 of volume second, would prepare a botanist to expect this species in the province of the North Isles.

1114. *Butomus umbellatus*, vol. ii. p. 478.

Dr. Bromfield suspected that the Butomus had been introduced into the Isle of Wight. It occurs in mainland Hants, and in Sussex and Dorset.

1115. *Triglochin maritimum*, vol. ii. p. 479.

This was observed by me on the coast of Lincolnshire in 1851, so that its provincial generality is now completed.

(*Volume Third*).

Even while the present volume has been going through the press some few further notes and remarks have become requisite or useful, in reference to a few of the species treated in it, and may in part be added here. Since the remark about a '*British and Foreign Cybele*' was in type (page 2), followed by an allusion to the relations between British and European botany, a volume has appeared bearing the ambitious title of '*The Vegetation of Europe, its Conditions and Causes*,' by Mr. Arthur Henfrey. It mainly consists of a series of extracts and abstracts, translated from the geographico-botanical writings of European botanists; and though it is thus a patch-work book, rather than a genuine work on the subject, it may be recommended for perusal as an epitome of what has been done by other men, and appropriated to a publisher's purposes by Mr. Henfrey. Few of those who are likely to read the book, will perceive how very little of it has been produced by its Title-page Author. Had the Writer been more faithful in acknowledging the sources of his information derived from foreign works, this intimation of borrowed plumage would not have been given here. I object not to quotations the most ample; but, on account of their injustice and deception, I do object strongly to appropriations if not fully acknowledged.

1160. *Juncus compressus*, vol. iii. p. 47.

In reference to this rush Mr. Hort writes me, "Do not most of the localities given for this, belong to the species or variety Gerardi? I have never gathered the true J. compressus." This question I am unable to answer with any confidence. The use of the name by authors and collectors would go to show J. compressus about equally

common with J. cœnosus (Gerardi); but that certainly does not establish the fact. My own experience is, that I could never clearly distinguish between the two plants by the alleged differences in the form and pointing of the capsule; but I have examples with the capsule decidedly longer than the perianth, collected by the side of fresh water, *ex. gr.* by the side of the Thames in Surrey.

1170, b. *Luzula Borreri*, vol. iii. p. 54.

At the time of printing this page my garden root of L. Borreri is still only in flower, later by two or three weeks than some of the wild examples of L. pilosa. The number of flowers on the peduncles varies from 1 to 3, as in L. pilosa; but this is no good test of the species, as those of L. Forsteri are by no means always single. The remark about the "supposed seeds" of L. Borreri, in volume second, is awkwardly expressed; of course, I meant seeds that were supposed to be those of L. Borreri. The seeds of my garden plant, last year, had withered in a half-grown state, and their withered and dry crest appeared to me slightly curved; an appearance which might however have been induced during the process of gradual desiccation within the capsule.

1212. *Carex Persoonii*, vol. iii. p. 97.

Mr. J. T. Syme gathered this Carex "above the precipice on the north side of Loch-na-gar, within fifty yards of the summit." This station may be considered to carry the ascending range of the species up to 1200 yards in the East Highlands, and to a temperature lower by 2 degrees than is indicated for it on page 97.

1251*. *Carex montana*, vol. iii. p. 134.

A fourth county, that of Gloucester, has this year been added by Mr. Hort to those ascertained to produce this species; which was found by him in the middle of April, "intermixed with C. digitata, under Penmoyle

Rocks, near Chepstow, on the Gloucestershire side of the Wye. It was just then coming into flower." (Phytol. iv. p. 551).

1262*. *Leersia oryzoides*, vol. iii. p. 143.

This grass has been since found in other spots by the river Mole, besides the two stations that are mentioned on page 144.

1274. *Phleum arenarium*, vol. iii. p. 155.

On the Lincolnshire coast, near Theddlethorpe, according to Mr. J. H. Thompson's notes before mentioned; a station which will add province 8 to the ascertained area of this species.

1281. *Alopecurus bulbosus*, vol. iii. p. 161.

The county of Monmouth (Mr. F. J. A. Hort) may be added to those enumerated on page 161.

1318. *Melica nutans*, vol. iii. p. 192.

The county of Gloucester may be added in the south limit, likewise on authority of Mr. F. J. A. Hort.

1322*. *Glyceria plicata*, vol. iii. p. 197.

Province 10 may be added in the area, on authority of Mr. J. G. Baker, who has sent me a specimen picked at Kirby Knowle, near Thirsk, Yorkshire.

1325. *Glyceria procumbens*, vol. iii. p. 199.

The presumption in favour of the existence of this species on the coast of South Wales, is increased by the circumstance of Mr. Hort having found it in Monmouthshire.

1334, f. *Poa polynoda*, vol. iii. p. 205.

The counties of Monmouth (Mr. Hort) and Hereford (Mr. Purchas) may be added to the few enumerated for this grass, on page 206.

1346. *Festuca arundinacea*, vol. iii. p. 222.

"I cannot yet understand this species. I have seen undoubted plants of it only in North and South Devon.

There is in Cumberland a very large Festuca, quite unlike the common F. pratensis, with perfectly cylindrical spikelets, and all the branches developed, but I did not see it in fruit. It is by no means so cæspitose as the Devon plant." (Mr. F. J. A. Hort, in letter of May, 1851).

1392. *Lastrea Fœnisecii*, vol. iii. p. 271.

Add province 5 in the area; but I have mislaid the memorandum of the personal authority for this addition. The county of Hereford is enumerated by Mr. Moore, in his 'Popular History of British Ferns,' page 296.

Xd. *Athyrium fontanum*, vol. iii. p. 275.

A claim has been advanced for the location of this fern in provinces 2 and 7, whether correctly so, remains to be decided. Particulars are reported by the Rev. A. Bloxam, in the Phytologist, vol. iv. page 518.

1400. *Asplenium germanicum*, vol. iii. p. 281.

Province [12] may be added in the area, but enclosed as uncertain until further confirmed. On authority of Mr. H. E. Smith, the locality of "Borrodale, Cumberland" is recorded by Mr. Moore.

1402. *Scolopendrium vulgare*, vol. iii. p. 283.

Perhaps province 17 may be correctly added in the area, which would thus be rendered 'general.' But I have no personal authority to cite for the North Highland province, and thus take the county of Sutherland from Mr. Moore's 'Popular History,' where it is given without the name of any botanical informant.

1408. *Hymenophyllum Wilsoni*, vol. iii. p. 289.

Province [11] may be doubtfully added in the area, on faith of a record in Mr. Moore's work above quoted, "Jurionside, Northumberland, *B. S. E.*"

1413. *Lycopodium annotinum*, vol. iii. p. 293.

Provinces 8 9 11 are indicated for this species in Mr. Moore's work. That of Trent is given on the authority

of the Rev. A. Bloxam, with the locality of "Charnwood Forest, Leicestershire;" but the species is not included in Miss Kirby's Flora of the county. That of Mersey is given on the authority of Mr. R. Withers, with the locality of Rumworth Moss, Lancashire. That of Tyne, on anonymous authority, with the locality of "[Teesdale, Durham]" enclosed as doubtful. I should prefer to hold all three provinces uncertain until further information shall reach me about the species really found in the localities mentioned.

1415. *Lycopodium alpinum*, vol. iii. p. 295.

Found in Hampshire according to Mr. Moore's work, without any authority cited for the habitat; but this species does not appear to have been known to Dr. Bromfield as a plant of the county, so that I fear some error.

278*. *Trifolium strictum*, vol. iii. p. 333.

Perhaps this has been found also in Anglesea, province 7, though the early state of the single specimen seen by the Rev. W. A. Leighton may leave some degree of doubt on the fact. It was gathered by Mr. F. Dickenson, as we are informed by Mr. Leighton, "on a wild uncultivated heath about three miles north of Aberffraw, Anglesea, nearly in the centre of the island, in abundance, covering a space of fifty yards square, and to all appearance undoubtedly wild" (Bot. Gaz. i. p. 28).

365, c. *Pyrus intermedia*, vol. iii. p. 348.

Province 5 may be added in the area, on authority of Mr. Hort, who finds this tree in Gloucestershire and Monmouthshire.

11, b. *Ranunculus circinatus*, vol. iii. p. 373, and i. p. 79.

Province 10 may be added, on authority of the Rev. W. W. Newbould, who observed this species at Potteric car, near Doncaster.

13*. *Ranunculus cœnosus*, vol. iii. p. 314, and i. p. 80.

Province 10 may be added, on authority of the Rev. W. W. Newbould, who saw this plant at Ecclesall, near Sheffield.

839. *Stachys germanica*, vol. iii. p. 482, and i. p. 262.

By letter of May 4, 1852, the Rev. W. W. Spicer informs me that an unexpected agricultural change of the ground on which it grew, has eradicated this plant from the station near Itchen Abbas,—whether permanently, or only temporarily, remains to be seen.

TABULAR SUMMARY POSTPONED.

In the introductory explanations to this current volume, page first, it was intimated that a tabular summary of the leading facts of species-distribution would be given here, provided sufficient space should remain for it. This is now found not to be the case. The Additional Species and Notes have occupied more pages than were then calculated as likely to be required for the supplementary matter. And besides this demand for space, the necessity of an Index to the Species has been strongly brought under the attention of the Author, spread as they are through three volumes, and many of the species being again mentioned in this third volume, although treated in one of the two former volumes. An index to the genera merely would have been found comparatively useless, by reason of the second mention of so many species, and on account of the many pages required for some of the long genera, as Carex and Hieracium. But an index to species, or further to the generic and specific names used, is unavoidably long and space-filling; and thus the present volume is rendered considerably thicker than the two preceding volumes, although the desired tabular summary is postponed to volume fourth, or possibly may need to be abandoned altogether.

MAP OF BRITAIN.

THE MAP OF BRITAIN, which is given opposite the Title-page of the present volume, may require some further explanation than could be conveniently introduced on the stone from which the impression was taken. It was not drawn for the Cybele Britannica; having been originally designed for use in a different though allied work. Its divisions are more numerous and equalized than those hitherto adopted in the Cybele; but in other respects they correspond exactly. This Outline Map may thus be used to indicate the *Eighteen provinces* and *Eighty-two counties*, into which Britain is considered as divided at pages 13—17 of the first volume of the Cybele;—or, it may be used for a more numerous and equal division into *Thirty-eight Sub-provinces* and *One hundred and twelve Vice-counties*. In the latter more numerous sections, some of the sub-provinces exactly correspond with the smaller provinces, and many of the vice-counties are identical with the smaller counties; the rule having been to subdivide only the larger provinces and counties.

To prevent ambiguity the original names of the provinces and counties are retained, the section or subdivision being distinguished by a prefixed word, usually the points of the compass, North, South, East, West, or Mid, as being obvious and readily remembered. The few exceptions are intended to avoid the incongruity of writing, for instance, North Northumberland, or South North-Highlands, &c. The list of all the divisions and

subdivisions, to be presently subjoined, will render their nomenclature more clear to the eye, and also more satisfactory to the mind of a botanist, by showing its familiarity and uniformity with the ordinary names of the counties and other established sections of Britain, as Wales, Lowlands, Highlands, &c.

On the utility of such divisions of a country, definite in boundaries and nomenclature, some intimation was made on pages 13 and 18 of the first volume. It will become more apparent in my future writings. But I would here particularly request the attention of readers to a remark near the foot of page 18, to the effect that the provincial divisions, like the old divisions into counties, are only arbitrary or conventional sections. Indeed, being entirely founded upon the old boundaries of counties, it is obvious that they must be divisions of a corresponding character, though of different dimensions. Strangely enough, Mr. Henfrey has totally overlooked this very obvious correspondence; and notwithstanding my own statement and explanation about these sections being politico-geographical, not natural or botanical, he has informed his readers, in 'The Vegetation of Europe', page 161, that "Mr. Watson divides Great Britain into eighteen botanical provinces, the boundaries of which are founded upon physical and not political differences;" &c. True, the grouping of the counties does render the provinces somewhat more natural than are the single counties, in respect to their physical geography; but it does not make them *botanical* sections at all. The 'Ascending Zones,' illustrated by a diagram at the left-hand lower corner of the Map of Britain, are true botanical divisions, being founded upon the actual distribution of the plants themselves, as explained in some detail in the first volume of the Cybele, pages 19 to 43.

I.—*Divisions of Britain into Eighteen* Provinces, *as indicated by Nos. on the margin of the Map.*

I. PENINSULA.
II. CHANNEL.
III. THAMES.
IV. OUSE.
V. SEVERN.
VI. SOUTH WALES.
VII. NORTH WALES.
VIII. TRENT.
IX. MERSEY.
X. HUMBER.
XI. TYNE.
XII. LAKES.
XIII. WEST LOWLANDS.
XIV. EAST LOWLANDS.
XV. EAST HIGHLANDS.
XVI. WEST HIGHLANDS.
XVII. NORTH HIGHLANDS.
XVIII. NORTH ISLES.

II.—*Subdivisions of the primary Provinces into the* 38 Sub-provinces, *and* 112 Counties and Vice-Counties.

I.

I. South Peninsula.
1 West Cornwall.
2 East Cornwall.
II. Mid Peninsula.
3 South Devon.
4 North Devon.
III. North Peninsula.
5 South Somerset.
6 North Somerset.

II.

IV. West Channel.
7 North Wilts.
8 South Wilts.
9 Dorset.
V. Mid Channel.
10 Isle of Wight.
11 South Hants.
12 North Hants.
VI. East Channel.
13 West Sussex.
14 East Sussex.

III.

VII. South Thames.
15 East Kent.
16 West Kent.
17 Surrey.
VIII. North Thames.
18 South Essex.
19 North Essex.
20 Herts.
21 Middlesex.
IX. West Thames.
22 Berks.
23 Oxford.
24 Bucks.

IV.

X. South Ouse.
- 25 East Suffolk.
- 26 West Suffolk.

XI. North Ouse.
- 27 East Norfolk.
- 28 West Norfolk.

XII. West Ouse.
- 29 Cambridge.
- 30 Bedford.
- 31 Hunts.
- 32 Northampton.

V.

XIII. South Severn.
- 33 East Gloucester.
- 34 West Gloucester.
- 35 Monmouth.

XIV. Mid Severn.
- 36 Hereford.
- 37 Worcester.
- 38 Warwick.

XV. North Severn.
- 39 Stafford.
- 40 Salop.

VI.

XVI. South East Wales.
- 41 Glamorgan.
- 42 Brecon.
- 43 Radnor.

XVII. South West Wales.
- 44 Caermarthen.
- 45 Pembroke.
- 46 Cardigan.

VII.

XVIII. North Wales.
- 47 Montgomery.
- 48 Merioneth.
- 49 Caernarvon.
- 50 Denbigh.
- 51 Flint.
- 52 Anglesea.

VIII.

XIX. East Trent.
- 53 South Lincoln.
- 54 North Lincoln.

XX. West Trent.
- 55 Leicester.
- 56 Notts.
- 57 Derby.

IX.

XXI. Mersey.
- 58 Chester.
- 59 South Lancaster.
- 60 West Lancaster.

X.

XXII. East Humber.
- 61 South East York.
- 62 North East York.

XXIII. West Humber.
- 63 South West York.
- 64 Mid West York.
- 65 North West York.

XI.

XXIV. Tyne.
- 66 Durham.
- 67 Northumberland.
- 68 Cheviotland.

XII.

XXV. Lakes.
- 69 Westmoreland.
- 70 Cumberland.
- 71 Isle of Man.

XIII.

XXVI. South West Lowlands.
- 72 Dumfries.
- 73 Kirkcudbright.
- 74 Wigton.

XXVII. North West Lowlands.
75 Ayr.
76 Renfrew.
77 Lanark.

XIV.

XXVIII. East Lowlands.
78 Peebles.
79 Selkirk.
80 Roxburgh.
81 Berwick.
82 Haddington.
83 Edinburgh.
84 Linlithgow.

XV.

XXIX. South East Highlands.
85 Fife, Kinross.
86 Stirling.
87 West Perth, Clackmannan.
88 Mid Perth.
89 East Perth.

XXX. Mid East Highlands.
90 Forfar.
91 Kincardine.
92 South Aberdeen.
93 North Aberdeen.

XXXI. North East Highlands.
94 Banff.
95 Elgin.
96 Easterness.

XVI.

XXXII. Inner W. Highlands.
97 Westerness.
98 Main Argyle.
99 Dumbarton.
100 Clyde Isles.
101 Cantire.

XXXIII. Outer W. Highlands.
102 South Ebudes.
103 Mid Ebudes.
104 North Ebudes.

XVII.

XXXIV. Lower N. Highlands.
105 West Ross.
106 East Ross.

XXXV. Upper N. Highlands.
107 East Sutherland.
108 West Sutherland.
109 Caithness.

XVIII.

XXXVI. North West Isles.
110 Hebrides.

XXXVII. Lower North Isles.
111 Orkney.

XXXVIII. Upper North Isles.
112 Shetland.

*** *Correction.*—The Nos. 53, 54, 55 were inadvertently misplaced in the draft of the Map. They are set correctly in the list above.

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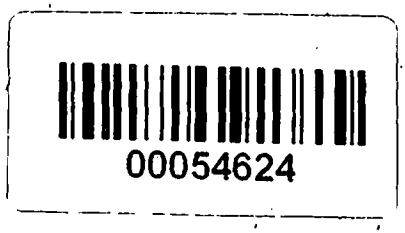

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